THE ARCHITECTURAL FORUM

INCLUDING "BUILDING MONEY"

AUGUST, 1936

BRITISH BUILDING BOOM ... NEWSPAPER PLANTS ... THE "MERCURY" ... COST TECHNIQUES ... RENT TO SPACE III ... HOUSES ... FHA REORGANIZATION ... H.A.B.S.

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AUGUST 1936



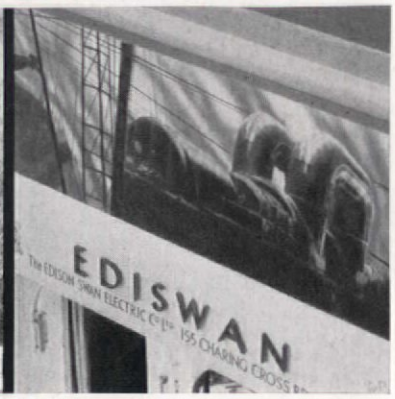
Man of the Month

. . . Architecture in motion (pg. 119)



Building of the Month

. . . the neighbors didn't object (pg. 111)



Process of the Month

. . . shot from a gun (pg. 13)

BRITISH BUILDING BOOM
PART ONE **85**

3,000,000 houses built since 1918, half that number since 1930 . . . 90 per cent cost less than $4,000 with land, 60 per cent less than $2,500 . . . what John Bull gets for his housing dollar, what he pays back in taxes . . . how this record activity stems from 1851 when the Government entered the housing business . . . why the program works, its mistakes and accomplishments . . . how from this Socialism private enterprise finally borrowed a big-time boom.

TWO NEWSPAPER PLANTS **95**

Photographs, plans and construction outlines for two contemporary newspaper plants —offices, editorial quarters, composing and press rooms.

PAPER MILL PLAYHOUSE **101**

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MARK CROSS STORE **105**

Fifth Avenue commercial remodeling notable for its clean and direct design in the best show-window technique.

COST TECHNIQUES **107**

First of a new series of technological studies which emphasize current cost-saving practice in plan, design and construction.

SMALL HOUSES **111**

Additional case histories in the small house series. Interior-exterior photographs . . . floor plans . . . critical comment . . . cost data . . . construction outlines.

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Editor, Howard Myers; *Managing Editor*, Ruth Goodhue; *Associates*, George Nelson, A. C. Shire, Cameron Mackenzie, Paul Grotz, Madelaine Kroll.

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VOLUME 65
Number 2

THE MONTH IN BUILDING

VOLUME. June's building permits and actual construction smashed resoundingly all records back to May, 1931, despite the fact that this period usually shows very little seasonal change from May. Department of Labor figures on building permits revealed the total of $155,635,000 from upwards of 1,500 cities, as compared with $119,000,000 in May, 1936, and $77,000,000 from 760 cities in June, 1935. Dun & Bradstreet's compilations of permits from 215 cities showed June's $113,000,000 to have exceeded all previous Junes since 1930, and likewise brought the total for the first half of 1936 to a high surpassing all since 1931: $464,000,000 as opposed to $253,000,000 over the same period a year ago.

In each section of the country an increase was recorded, both for June and for the first six months, ranging from New England's 12.8 per cent improvement for June to the Middle Atlantic's 181.8, and from the West Central's 37.9 for the first half of 1936 to the South Central's 114.9.

This happy augury for future building was mirrored by the increases recorded in actual construction, the F. W. Dodge release pointing to a volume of residential building of $73,604,600 in the 37 Eastern States. This peak likewise looks back to May, 1931 for a higher level. June's building represents an increase of almost 5 per cent over May, 1936, previous high of the intervening period, and is about 48 per cent ahead of the 37-State total in June, 1935.

For the first half of 1936, residential building, with a total of $335,000,000, shows a gain of 61 per cent over the same period last year, and here, as for building permits, the improvement is country-wide.

MONEY. In 1913 the Federal Reserve Act was passed, creating a banking system which today embraces 80 per cent of the total U. S. banking facilities. At the same time the Act defined the legal base of U. S. credit, providing that all member banks must maintain a reserve of 3 per cent against time deposits. Against demand deposits member banks in Chicago and New York were required to maintain reserves of 13 per cent; banks in other cities, a reserve of 10 per cent; and banks in the country towns, a reserve of 7 per cent. Last month for the first time since the passage of the Act, this base was arbitrarily changed by a special order emanating from the Federal Reserve Board. The order raised each of the above reserve requirements to 50 per cent, effective August 15.

Over and above their everyday business needs, Reserve Banks now have excess funds amounting to about 3½ billion dollars. Because the Reserve Act requirements average about 10 per cent, this means that the Reserve Banks hold a potential credit of about ten times 3½ billion dollars, or 35 billion—a sum far in excess of the credit expansion provided in 1929. The presence of this immense reservoir of credit has for the last twelve



Acme

President Aldrich

months been a source of anxiety and congratulation alike in Wall Street. On the one hand, Winthrop W. Aldrich, smart, conservative President of the Chase National Bank has constantly maintained that the presence of so much potential credit could not fail to lead to inflation. On the other, no less a brilliant and practical student of economics than S. Parker Gilbert, partner of J. P. Morgan, countered that these large reserves had been in existence for two years without inducing inflation and that to raise reserve requirements at this time might delay Recovery. Last month in upping its rates the Federal Reserve Board specifically gave as cause for its action the desire to guard against "possible injurious credit expansion," thus tacitly siding with President Aldrich's philosophy. By raising its reserve requirements 50 per cent, the Board in effect cut the excess reserves of the member banks from 3½ billion to less than 2 billion, thus lopped off at one stroke more than 10 billion dollars worth of potential credit.

Last winter Federal Reserve Board Chairman Marriner S. Eccles explained that he would raise Reserve requirements the minute he saw inflation ahead. Whether he had by last month actually spied any such inflation on the horizon was a moot point. A more likely reason for his raising the reserve requirements was that the approach of elections demanded from his Administration some sign to comfort the conservative voter. Since President Aldrich wrote Landon's money plank and since Chairman Eccles is following President Aldrich's advice, the move was at least politically astute.

The actual value of Chairman Eccles' step was debatable. On the one hand it drew praise from a source no less hallowed than Governor Montague Collet Norman, of the Bank of England, who upon being asked his opinion of the increased reserve requirements, said: "It is a good thing. I know it has been contemplated for a long period. If it wasn't a good thing they would not have done it. But of course it is very experimental." On the other hand, that astute observer of finances, *Economic Statistics*, wrote in its weekly report: "The real danger lies not so much in excess reserves which are not being used but in the tremendous volume of bank credit already in existence . . . (which) are far in excess of the normal requirements of business. Over these funds the Administration has no control . . . . The question of excess reserves is insignificant in comparison."

Wall Street, having already thrashed the matter out months in advance, failed to show any reaction to the new move whatsoever.

PEOPLE. For the last two years Illinois' Representative A. J. Sabath has been junketing through the 48 States on a Congressional investigation of real estate practices. Month before last he rushed his first report into print, pleaded with Congress for more funds. His report turned out to be a rough-and-ready indictment of real estate methods and of reorganization in particular. Unfortunately for Prober Sabath, the report of the Securities and Exchange Commission (ARCH. FORUM, July, 1935, p. 75) was released at about the same time, told Sabath's tale so much better that the latter received mediocre notices for his nation-wide tour.

Remedial legislation proposed by Sabath featured a bill directing the Comptroller of the Currency to appoint conservators for all reorganizations under 77-B, as well as to pass on all fees, commissions, and plans coming under the scope of such reorgani-

zations. Report and bill were referred to the House Judiciary Committee where they promptly died. Also vetoed was a request for an extra $25,000 to continue the investigation, which had already cost more than any other realty probe on record. With this double refusal in his pocket, and his limelight already stolen by the SEC, Prober Sabath nevertheless revealed last month that he still had a few pennies left—and that he would use them to continue the work of the Sabath Committee.

INTEREST RATES. While Big Business continued to decry the trend as dangerous, interest rates last month settled a notch further down the scale toward "cheap money." Chairman Jesse Jones of the Reconstruction Finance Corporation announced that retroactively effective July 1, there would be a general reduction of charges on RFC loans. Rates to insurance companies, mortgage loan companies, and building and loan associations, among others, were dropped from 4 to 3½ per cent; while the RFC Mortgage Company reduced its minimum rate on real estate from a flat 5 per cent to 4 per cent.

Although the move was hailed in some quarters as political, this interpretation seemed to stretch the fact. And the simple fact was that the RFC was now able to get cheaper Government money. While this allowed RFC borrowers to retire their obligations at a lower rate, it also had the somewhat unfortunate effect of attracting new borrowers from the credit field. Thus while the RFC was lifting itself out of the money business with one foot, it was sinking the other deeper than ever in private preserves.

Last month also saw the official termination of that part of the Federal Housing Administration program which allowed insurance on loans to private individuals for equipment in the homes. Under the new arrangement only equipment fixed to the house can serve as a basis for FHA insurance. The effect of this new ruling will be to remove the Government from participation in the commercial loan business. And while its withdrawal from this field will be generally welcomed, the consumer will have one less friend at court when he comes to ask for credit. For to the everlasting honor of the FHA it must in justice be observed that its operations in the commercial credit field have brought to light, and so reduced, the outrageously high rates hitherto attendant upon installment buying.

LABOR. A vertical union tries to organize workers by industries, those in each industry comprising one union. Prime examples of vertical union today are John L. Lewis' United Mine Workers, the proposed vertical union of the steel industry. The vertical union makes no distinction between skilled and unskilled labor, accords to each a voice in the management of union affairs. Although unskilled labor far outnumbers "skills", control of the vertical union usually falls in the hands of the latter.

The horizontal union limits its organization efforts to the skilled and semi-skilled workers, whom it tries to organize by crafts, regardless of industries. A typical horizontal union is the International Association of Machinists. In 55 years of existence, the horizontal unions have been able to organize about 3½ out of 30 million U. S. workers.

The company union is industry's contribution to the union fight. Without exception company unions try to organize all the workers in each plant into one union, regardless of craft or skill, thus by implication admitting the superior strength of the vertical form of organization.

The original aim of A. F. of L.'s shrewd Founder Samuel Gompers was to achieve bargaining powers by establishing monopolies of the various classes of skilled labor. But lack of aggressive leadership, and the introduction of mass production have sapped the strength of these monopolies, so that today their bargaining powers are greatly reduced. Furthermore, organization by crafts rather than by industries has forced the employes of any single corporation to split their numbers among as many as 25 different and frequently disagreeing craft unions. Thus has the horizontal union become outmoded by industrial progress.

These were the facts which last month many a business man was rehearsing to himself as day after parlous day he read in the Press of the fight between President William Green's entrenched A. F. of L. and passionate, aggressive Miner Lewis's Committee for Industrial Union (ARCH. FORUM, July, 1936, p. 5). As the issue became defined with increasing clarity, two facts emerged with unmistakable definition. The first was that the coming struggle for industrial power was to be the most critical and the most bitter in the history of U. S. Labor. The second was that the vertical union was bound, sooner or later, to win that struggle—if only because it had faced industrial reality more squarely than its rival.

For Building, these events seemed last month to have small significance, for that industry is possessed of an unique form of organization which renders it almost immune to the threats and to the blandishments of the vertical union. In the first place the building industry today contains no large, cohesive units under single management, with the result that the multiplicity of craft unionism is offset by the disorganization of their employers. And, perhaps more importantly, Building, alone of all major industries, employs almost nothing but journeyman labor, a class of worker who instinctively identifies himself much more closely with his craft than with his industry.

EMPLOYMENT. Last month there came to the desk of Secretary of Labor Frances Perkins a document which should prove to be one of the most interesting reports ever to be compiled about the Building industry. The work of the U. S. Employment Service, it detailed the employment possibilities of the building trades. The main body of its data consists simply of a survey of the number of jobs now extant in the building trades and the number of types of work. Item: the report lists a total of 665 different types of jobs.

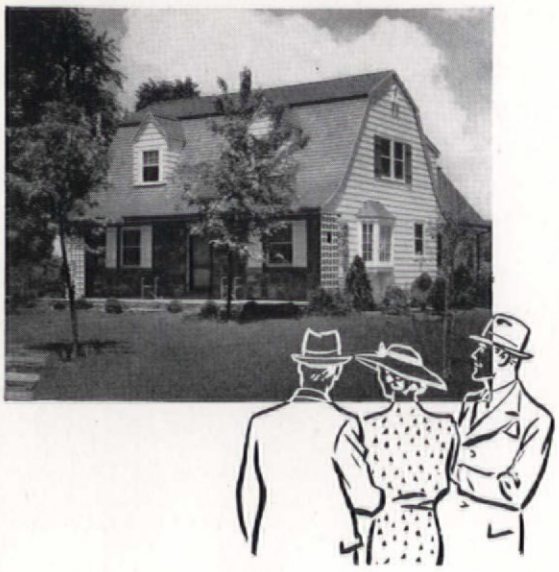
Primary induction to be made from the survey was that the best way to offset the impending shortage of building labor was to organize the secondary labor reservoir, and reclassify it according to skill requirements. To illustrate this rather new idea Washington was last month repeating this fable: a large body plant in the automotive industry, short of labor, failed to find its best secondary market among the steel workers, in spite of the fact that a body requires considerable steel work. Instead the best men were discovered to be wood workers, and furniture makers. Point was that they possessed the degree of skill required although they lacked the actual experience in metal.

Uncovered by the survey amid the usual cries of astonishment was the crazy-quilt pattern of labor organization in the building trade. Because it was fine ammunition for John L. Lewis in his labor organization fight (see col. 1), the Department of Labor's survey was already in great demand before its official release. In its forthcoming issue THE FORUM will examine the report in some detail.

EARNINGS. Last month the earning reports for the first quarter of 1936 were made available, revealed a continued trend upward, with exceptions to the rule remaining scattered. Indicated was the close relationship of these quarterly earnings to the record increase in building.

CORPORATE EARNING REPORTS
D = deficit

Quarter ended March 31	1936	1935
Air Reduction	$1,430,231	$1,254,008
Allis-Chalmers	754,127	22,242D
Brunswick-Balke-Collender	58,922D	96,492D
Dupont	14,713,782	11,097,142
Formica Insulation	38,161	29,765
General Electric	7,086,830	5,390,931
Kelvinator	632,488	357,297
Libbey-Owens-Ford	1,996,967	2,219,767
National Steel	2,377,145	3,367,633
Paraffine Companies	381,551	250,036
Republic Steel	361,032	1,834,235
Reynolds Metals	317,674	287,962
Ruberoid	42,613D	17,858D
U. S. Gypsum	436,617	387,670
Truscon Steel	66,198D	158,077D
Yale & Towne	170,903	9,676D



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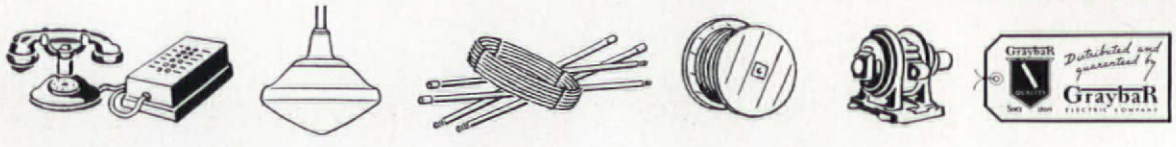




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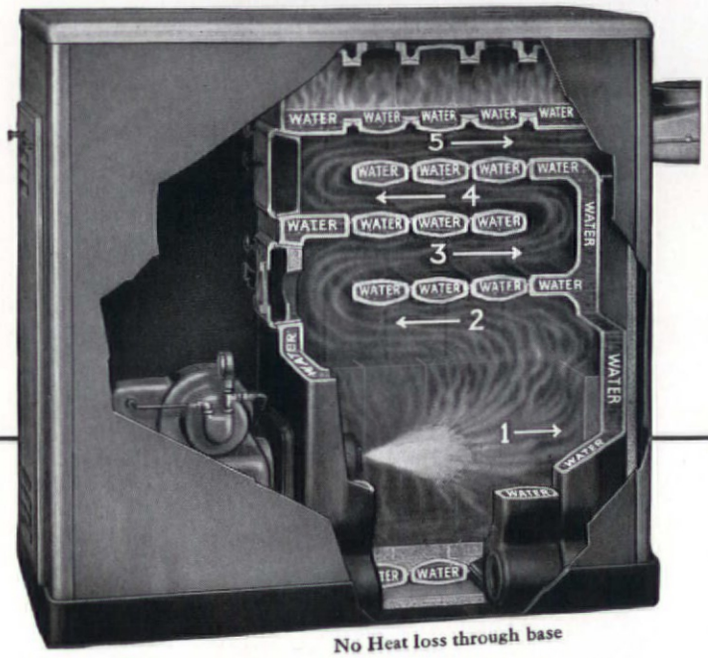
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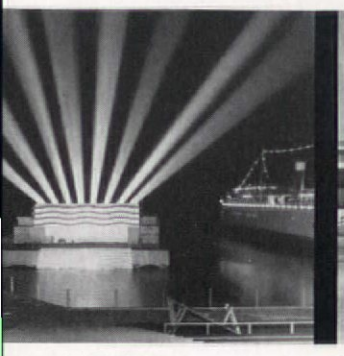
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FORUM OF EVENTS



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STREETS OF THE WORLD



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GREAT LAKES EXPOSITION

ONE HUNDRED years ago a surveyor named Cleaveland built a rough-hewn cabin upon the site of a future city which now bears his own slightly misspelled name. Last month this city publicized the anniversary by the formal opening of a fair whose obeisance to a not-so-distant prototype is apparent in its component elements, although there is a logical sequence in its general scheme.

The designers are to be congratulated on their effort to emphasize the fundamental reasons of the fair's existence by the strategic locations given to the principal exposition buildings. This group is dedicated to the exhibition and explanation of the parallel growth of a city and of an industry. The planners have very ably shown the great historical similarity between the crude architecture and the heavily laden ore, coal, and lumber barges of the last century and between the multicelled office building and the highly specialized sciences of our contemporary era.

It is logical that the progression of circulation should begin with the group of principal Exposition buildings, then pass through the industrial displays before reaching the Midway, identified as "The Streets of the World." The administrative committees have judged this part of the Exposition foreign to its substance and purpose and so have segregated it and charged a special entrance fee. If the success of the enterprise is to be gauged by the revenue, there may be a clash of opinion as to the wisdom of the selection of steel and iron developments for emphasis instead of Toto Laverne's frivolous gesticulations.

The permanent elements of the fair include the horticultural gardens and building which have been designed to become a part of the Civic Plan along with a 125-acre Mall upon which the various temporary buildings have been erected.

The committee of architects, engineers, and designers, headed by Abram Garfield, has been influenced by details of past fairs, but it has further projected such features as night exterior and interior lighting as an integral part of the design, especially in such structures as the Main Entrance Gate, and the Hall of Progress; color on separate buildings has been applied with particular regard to the ultimate effect of the composition as a whole. Although some of the less important units are obvious plagiarisms and adaptations of past fairs, there is an honest and logical attempt at correlating the various units into a well-knit composition without resorting too openly to the obsolete and tiresome use of axes.

Few glaring errors have been made in plan organization; however, when an effort has been made to express dignity, massiveness, and weight out of light synthetic materials, wooden structures, and brilliant streamers, the result is an odd expression of amazing and trite forms, such as the perforated pylons which make up the Court of the Presidents, and the misshapen false front hiding the very interesting structure of the Automotive Building.

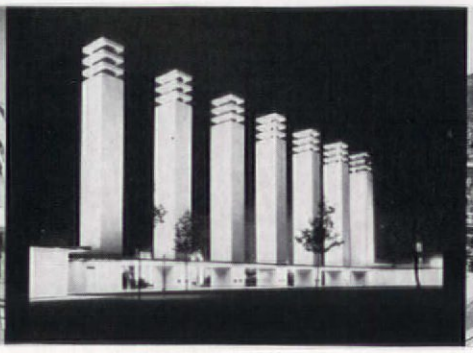
(Forum of Events continued on page 48)



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OIL BURNING AIR-CONDITIONING FURNACE
One of the Herman Nelson Automatic Heat and Air-Conditioning Units

PRODUCTS TO MEET *every individual requirement*

Self Contained Summer Air Conditioner


Oil Burning Air-Conditioning Furnace


Oil Burning Boiler


Coal Burning Air-Conditioning Furnace and Automatic Stoker


Conversion Oil Burner

FOR years, you have accepted Herman Nelson equipment as a standard of quality, efficiency and practicability. And you know, of course, that the skillful Herman Nelson methods of producing healthful air conditions are known and accepted throughout the world.

Naturally, the recent announcement of a complete line of Herman Nelson Automatic Heat and Air-Conditioning equipment for the residential and small commercial market was welcomed by architects and builders everywhere. Now, regardless of the requirements of your clients, you can recommend Herman Nelson products of the same high quality and efficiency you have known for years. They are made available through carefully selected distributors.

We can't go wrong on this equipment . . . If Herman Nelson makes it we know it's right



Feel free to consult the distributor nearest you or write us for complete information for your files

HERMAN NELSON

Automatic Heat and Air Conditioning

GENERAL OFFICES AND FACTORIES AT MOLINE, ILLINOIS

"I got a $785 job thru the sale of a Nu-Bidet"

SAYS
CHAS F. BISANTZ
NEW YORK

"Just between you and me, we sometimes overlook a good bet by ot learning all about some of the better new things that are rought on the market.

"Take the Nu-Bidet for example. I learned about it and sold one one of my regular customers. He had an old-fashioned home and n old-fashioned bathroom. But the bathroom was in good working rder, so why change it? However, his wife wanted a Nu-Bidet and required the installation of a new toilet because the old one was old it was no longer standard.

"The new toilet made everything else in the bathroom look ter- ble and as a result I got a complete modernization job for $785.

"I am going to show the Nu-Bidet to every one of my customers nd I know I will not only sell Nu-Bidets but plenty of other work s well, because I am sure I would not have secured this moderniza- on job without the Nu-Bidet as an entering wedge."

And that is not all. Another plumber called on 20 of his best ustomers and—believe it or not—sold 10 Nu-Bidets in two days. till another sold a new apartment job where 40 Nu-Bidets will be nstalled in the one building.

The Nu-Bidet is a red-hot sales builder—hot as a red-hot stove d. The public is bathroom and hygiene minded. There are more han ten million bathrooms in America, which means ten million rospects on which master plumbers, architects and contractors an go to work *now*.

Send coupon for full information and beautiful brochure, "Your nswer to a Long-Felt Need." Please give your jobber's name.



The Nu-Bidet is a complete unit of seat, Nu-Bidet and lid in one assembly, which replaces the regular seat and lid. *It is equipped with a specially designed and patented vacuum breaker and four ball and socket check valves, making back siphonage or a cross connection impossible.*

WHAT IS THIS NU-BIDET? READ THIS!

The Nu-Bidet is a thoroughly modernized Sitz Bath...and more. The following uses make it a safeguard to health and as necessary to personal hygiene as your tooth brush or the bathroom itself.

Sitz Bath for personal hygiene and treatment of rectal disorders.

Spray for same purpose and feminine hygiene. Attachment for douche, enema and hydrotherapeutics, entirely eliminating the old rubber bag method.

The Nu-Bidet can be installed on any standard size toilet bowl in less than two hours. It will convert the ordinary bathroom into one that is truly hygienic at a small investment. It will sell bathroom modernization. Get aboard the bandwagon. Use coupon now.



The Nu-Bidet lifts up and stands against the lid when not in use.



The Nu-Bidet looks like the average toilet. No extra space required.

The Nu-Bidet
(BEE-DAY)

LEENSAN CORPORATION • 341 Park Avenue • New York

KLEENSAN CORP., 341 Park Avenue, New York, N. Y.
Please send brochure, "Your Answer to a Long-Felt Need." F8

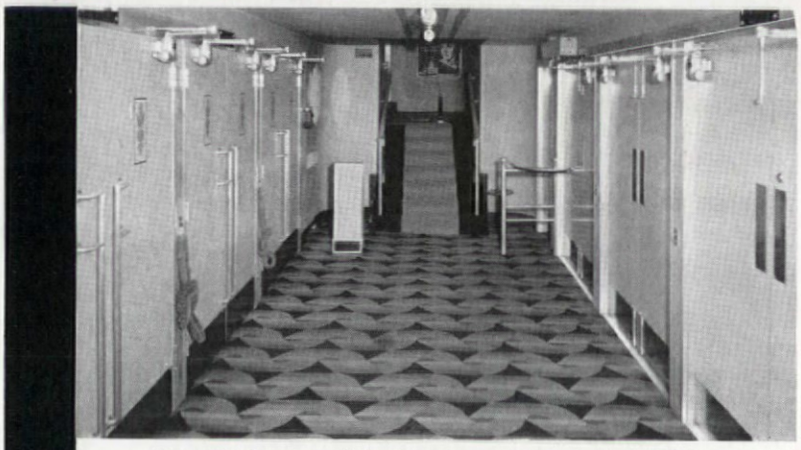
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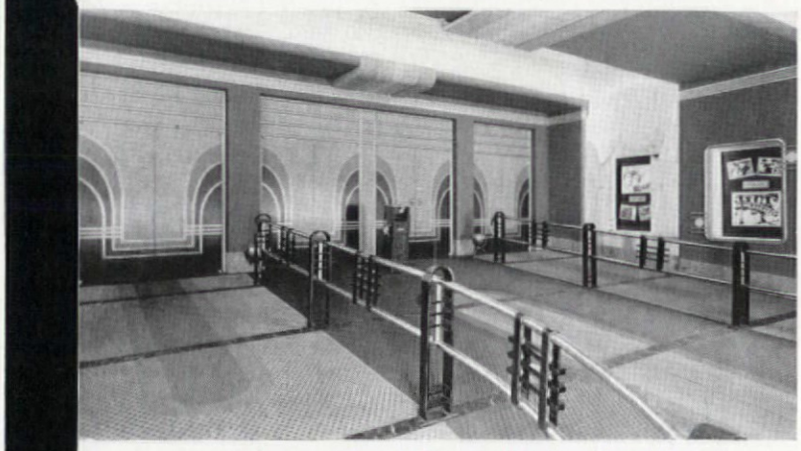
City and State_____

Jobber ☐ Retail Plumber ☐ Consumer ☐ Architect ☐

Theater Doors and Lobbies Modernized with Formica



Formica Doors and Wainscoting, Knickerbocker Theater, Nashville, Tenn.; Marr & Hollman, Architects.



Formica Entrance Doors, Warner Brothers Penn Theater, Washington, D. C.; John Eberson, Architect.



Formica Interior Doors and Panelling, Warner Brothers Penn Theater, Washington, D. C.

FORMICA in colors and with inlays has been used during the past year in modernizing hundreds of theaters in all parts of the country. The color range, and the possibility of inlays in metal and Formica in other colors, makes the widest variety of decoration possible.

The splendid satin surface of the material and its chemical inertness and immunity to stains makes it possible to maintain the original appearance of the material indefinitely. It is easily cleaned.

Formica is used for doors, lobby wall covering, building fronts, ticket office paneling and deal plates, washroom wall covering and for many other uses.

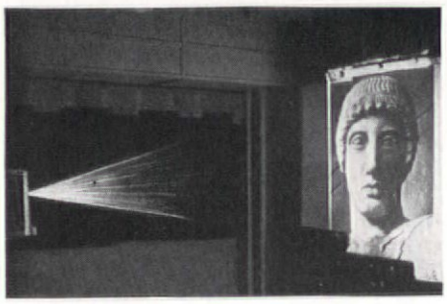
Ask for the facts.

THE FORMICA INSULATION CO.

4620 Spring Grove Ave., Cincinnati, O.

FORMICA

FOR BUILDING PURPOSES



METHOD



...AND RESULT

PAPERLESS PHOTO-MURALS

THE photo-mural, while it is one of today's most dramatic forms of decoration, has rigid limitations. Consisting essentially of enlargements applied as wall paper, the photo-mural does not wear well, is difficult to construct for large surfaces, can be applied only to flat walls. These objections have kept the photo-mural from being entirely satisfactory for general architectural decoration. But currently a method developed in England is being introduced in the U. S. whereby photographs may be printed directly on any surface in any desired size.

The inventor, Mr. Eugene Mollo of London, is an architectural decorator who executes much of his work with spray guns. Experimenting, he found that a suitable photo-sensitive emulsion could be sprayed on a wall or other surface. This he did in a subdued, artificial light. On the surface so treated, he can project any photographic image by means of an optical apparatus similar to an enlarging lantern. The image is then developed and fixed in place by solutions applied with spray guns. The result is a photographic image of any desired size printed directly on the selected surface. For protection, the image is given a final spray coat of a clear resistent lacquer. Prime feature of the process is that it can be applied not only to flat surfaces but to corrugated, fluted, plaster, stippled, and bas-relief backgrounds. All indented surfaces afford especially attractive mediums, the variations in depth giving a stereoscopic appearance.

In addition to complete structures, the surfaces of metal, acoustic material, and wood can be sensitized and decorated. Mural decorations in buildings are executed on the site; other types of work are done in large specially fitted workrooms.

The process also finds a place in the motion picture studio as it can be used for making photographic backgrounds on canvas. Apart from the saving in time and cost, these can easily be rolled up and stored for future use, whereas a background of photographic paper mounted on wood is inconvenient to store and is often destroyed after its first use. The process has been commercially developed by the inventor in collaboration with Mr. P. Lamboit and exclusive rights for this country have been given to Jenter Displays, Inc., 9511 Fifth Avenue, New York, N. Y.

QUICK DRYING PROCESS FOR CONCRETE

A method of removing excess water from concrete so that forms can be removed within an hour or two of pouring is being used by the Vacuum Concrete Corporation of 224 East 38th Street, New York, N. Y. As indicated by the name of the company, the water is removed from the surface of the concrete by suction produced in a vacuum pump connected by pipe and hose to the forms.

It is claimed that the pressure exerted by the atmosphere when a vacuum is created inside the forms compacts the concrete, eliminating voids as well as squeezing out the

(Continued on page 39)



KANSAS CITY MUSIC HALL

(IN THE KANSAS CITY MUNICIPAL AUDITORIUM)

Architects: Alonzo H. Gentry, Voskamp and Neville *and* Hoit, Price and Barnes, *Associated Architects*

Unlike many others, the Kansas City Music Hall and Municipal Auditorium is completely finished in an architectural and decorative way. It is *beautiful*, as well as useful.

The architects—Alonzo H. Gentry, Voskamp and Neville—used gay color in the interior in a way unique for a structure of this kind. Color, combined with simple modern architecture, creates an atmosphere of brightness, gaiety and cheer.

Approximately 2800 yards of Bigelow carpeting—in grades and colorings ideally suited for specific spaces—help to give the desired effect. Special designs and colorings were created as a part of our regular service. For greater comfort, better acoustics and longer life, nearly 2600 yards of hair lining was laid under the carpeting.

Bigelow is proud to have served as Carpet Counsel on this important project. We've worked with leading architects for years—have built up a fund of practical knowledge you'll find valuable. May we put it to work for you? Contract Department, Bigelow-Sanford Carpet Co., Inc., 140 Madison Ave., N. Y.

CARPET COUNSEL

BY THE BIGELOW WEAVERS

You Will Want a Set of These
FREE DATA SHEETS



Concentrated Facts About
NEW HOLLAND AIR CONDITIONING
Prepared by DON GRAF

RECENT developments by the Holland Furnace Company have brought the major benefits of air conditioning within reach of many more families than could afford to enjoy them heretofore. Information about the new HOLLAND system of real value to every architect has been embodied in a set of 6 data sheets prepared by Don Graf, B. S., M. Arch., to conform to the popular "Pencil Point" series. Technical facts reduced to bare essentials have been specially arranged for quick reference and to facilitate specifying and detailing. A set is yours for the asking. Merely mail the convenient coupon below.

Mail Coupon Today

HOLLAND FURNACE COMPANY
HOLLAND, MICHIGAN [*World's Largest Installers of Home Heating and Air Conditioning Systems*

HOLLAND FURNACE CO.,
Dept. AF-8, Holland, Mich.
Mail me FREE data sheets and information on other Holland equipment checked below.
☐ Holland Oil Burners
☐ Holland Automatic Coal Burner
☐ Holland Furnaces ☐ Have Engineer Call
Name.....
Address.....
City.....*State*.....

★

Still time to furnish

Air Conditioning

for clients who want it

NOW!

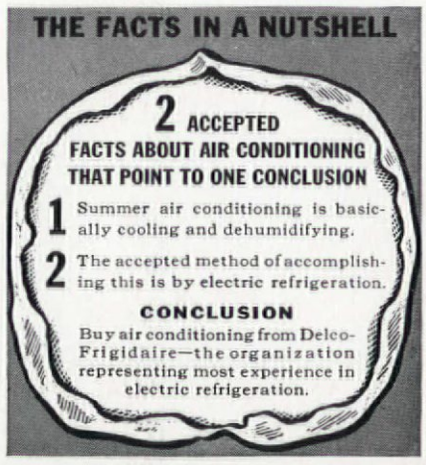
Delco-Frigidaire is equipped for quick action

THE sultry, sticky heat of dog days creates demands for air conditioning systems that can be installed immediately. Because Delco-Frigidaire has a nation-wide organization it can give your clients the quick action that will please them, and will relieve you of worry.

Every Delco-Frigidaire distributor can furnish air conditioning for all types of jobs. He can supply Electric Room Coolers for a single room or office, or system that will take care of an entire building, or any part of a building.

All Delco-Frigidaire air conditioning systems are products of General Motors. All are based on the accepted fact that summer air conditioning is primarily cooling and dehumidifying air. Since it is conceded that the normal way to accomplish this is by electric refrigeration the importance of Delco-Frigidaire in this field becomes self-evident. For Delco-Frigidaire, through its General Motors background, is world leader in electric refrigeration.

We welcome opportunities to discuss air conditioning problems with architects. And at this time we particularly invite you to call upon us for quick work that will meet the immediate situation, and go on giving entire satisfaction for years to come.



WIRE US ABOUT RUSH JOBS

See Sweet's Catalog File (Section 26/7) for details on our air conditioning equipment. Write our headquarters in Dayton, Ohio, or phone our New York office at CIrcle 7-1367.

DELCO-FRIGIDAIRE CONDITIONING CORPORATION

AUTOMATIC HEATING **DAYTON, OHIO** *AIR CONDITIONING*

PRODUCTS OF GENERAL MOTORS



Unusual and distinctive use of Atlas White terrazzo in the residence of Mrs. Edwin Ruud, Hillcrest Road, Pittsburgh. Maximilian Nirdlinger, Architect; Patrizio Art Mosaic Co., Terrazzo Contractor, both of Pittsburgh

TERRAZZO GIVES YOUR IDEAS FREE REIN

ONE of the things that makes fine terrazzo so highly satisfactory to work with is this:

You can carry out your creative ideas—both as to color and design—exactly as you plan them.

You are not limited in any way. You can select from a wide variety of marble chips of many colors and shades. You can select from a number of color pigments for matrix tints. With these, and with Atlas White portland cement (plain and waterproofed) as a base, you can create exactly the effect you desire—in color combinations, pattern and texture variations.

Richly beautiful textures for homes and churches—strong colors and striking patterns for stores and public buildings—brilliant contrasts for theater lobbies . . . whatever the application, you are sure to get a faithful execution of your design with Atlas White terrazzo.

Consider this fine terrazzo in planning new buildings or modernization. It is economical, durable, inexpensive to maintain. And remember—the use of *white* portland cement is essential to bring out the full rich beauty of fine terrazzo.

Your terrazzo contractor will gladly give you full information on fine terrazzo made with Atlas White, and show you samples of colors and textures. Or write us direct. Universal Atlas Cement Co. (United States Steel Corporation Subsidiary), 208 South La Salle Street, Chicago.

SPECIFY ATLAS WHITE PORTLAND CEMENT FOR ALL FINE TERRAZZO

T-3

INE TERRAZZO *MADE WITH* **ATLAS WHITE PORTLAND CEMENT**



Steel Framing *gives greater freedom* in working out details

Cutting joists and studs to any desired length offers no difficulties in Bethlehem Light-Load Steel Frame Construction. The cutting torch does the job with minimum delay and trouble, requires no more time than sawing through similar wooden sections. Of further advantage is the fact that all cutting and fitting are done right on the job, which does much to simplify framing operations.

What is more, the use of Bethlehem Open-Web Steel Joists and studs places no limitations on the designer, as is the case when predetermined nodules are employed. On the contrary, they are readily adaptable to any type of architecture and may be used to equally good advantage in a small, simple dwelling or a pretentious home with an irregular floor plan and a complicated roof structure.

The economy and efficiency of these two features of Bethlehem Light-Load Steel Frame Construction are self-evident. What is not so apparent at first glance is the increased salability of steel frame homes. Yet—it's only in a steel frame house that you can offer prospects permanent protection for their investment; certainty of low upkeep costs; absolute freedom from frame-shrinkage and warpage; immunity to damage by termites; a high degree of fire safety.

Those are powerful sales arguments, every one of them. Add them to the economy and simplicity of Bethlehem Light-Load Steel Frame Construction and the adaptability of these members to every type of design. Isn't it clearly apparent why progressive builders and developers are so keenly alert to the potentialities of this type of construction as a means to easier sales? You owe it to yourself to have all the details on Bethlehem Steel Products for light occupancy structures.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY



FOR GREATER RESISTANCE TO FIRE...FOR STRONGER BOND WITH PLASTER

USG *Provides Tested, Proved*

PERFORATED ROCKLATH

THE FIREPROOF LATH

■ Here is an outstanding improvement in gypsum lath that is important to all architects. It is Perforated Rocklath with tested, proved features never before obtainable in gypsum lath. It is amazingly efficient in face of fire, economical to use, and has noteworthy mechanical advantages as well.

Here are the facts. Perforated Rocklath is a $\frac{3}{8}$-in. thick gypsum lath with $\frac{3}{4}$-in. circular perforations spaced 4 inches apart. The perforations give Perforated Rocklath a new amazingly high fire rating—they also give the plasterer a better base to plaster over, one that cuts into the plaster, that takes hold better as he runs the trowel over it. The perforations also serve as a "mechanical key." Plaster molds through the perforations—grips the lath with a mechanical key in addition to the natural bond.

QUALIFIED FOR ONE-HOUR FIRE RATING

Perforated Rocklath, properly plastered over, qualified for a one-hour fire rating in a test made at the Bureau of Standards—an unusually wide margin of safety. USG Perforated Rocklath is patented and manufactured only by the United States Gypsum Company. It is available from leading dealers in virtually all communities.

TESTED 3 YEARS ON WEST COAST

Perforated Rocklath is not an experiment. It has been thoroughly tested in the laboratory and has had a successful three-year use on the Pacific Coast. Millions of feet of Perforated Rocklath are now in use.

SEND FOR FREE SAMPLE

Without fail, mail the coupon today for a free sample of Perforated Rocklath. Learn for yourself, at first hand, the exclusive advantages of this unique plaster base.

UNITED STATES GYPSUM COMPANY
300 W. Adams Street, Chicago, Illinois
Please send me a free sample of USG Perforated Rocklath. AF8

USG

Name .....

Address .....

City .....

State .....

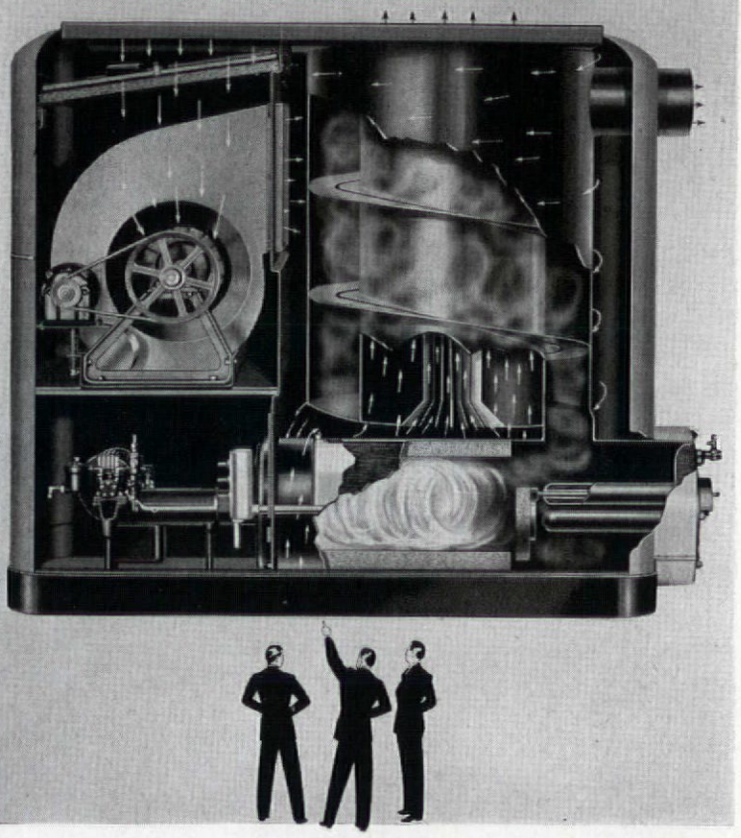
PRODUCT OF UNITED STATES GYPSUM COMPANY

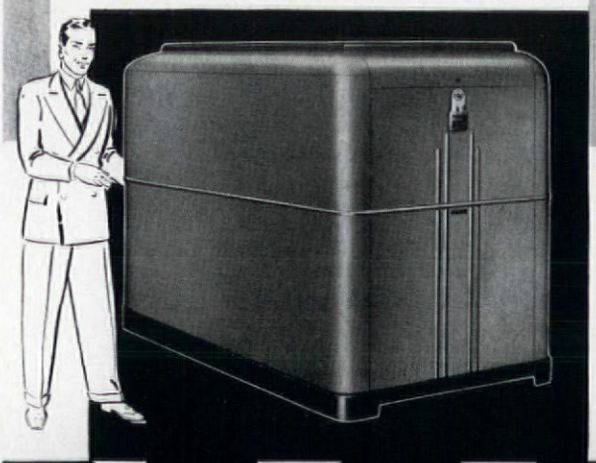
Low Initial Cost..
HIGH OPERATING EFFICIENCY!

• Air conditioning of some kind is rapidly becoming an indispensable part of modern living equipment. No house can be called modern unless it contains some provision for cleaning, humidifying and circulating the air as well as warming it.

• Norge meets this demand in the simplest, most effective and most economical way. Designed for homes costing from $5,000 to $50,000 the Norge Fine-Air Conditioning Furnace Unit automatically warms, filters, humidifies and circulates the air in every room in the house—provides plenty of hot water. Its heating efficiency is phenomenal—from 2 to 4 times greater than old-fashioned methods. In summer the Unit may be used to circulate filtered air throughout the house or may be supplemented with cooling equipment if desired.

THE NORGE FINE-AIR CONDITIONING UNIT





• It will pay you to investigate the Norge Fine-Air Conditioning Furnace. An inspection will quickly reveal many points of superiority over other units of its type. Visit the Norge dealer near you. Or, if you prefer, write for descriptive literature.

NORGE HEATING AND CONDITIONING DIVISION *Borg-Warner Corporation, 606-670 E. Woodbridge Street, Detroit, Michigan.*
WARREN NORGE CO., Inc., *Apartment and Builders Sales Division, 315 Fourth Ave., New York City, Tel. STuyvesant 9-5000.*

NORGE

Fine-Air Conditioning Furnace Unit

Get the complete story of Norge Home Appliances for apartment or home installation. There are distinct advantages in standardizing on Norge equipment — apart from the exceptionally high quality of the products themselves.

Seagram's COMPLETES OFFICE DECORATIONS WITH ATTRACTIVE *Armstrong Floors*

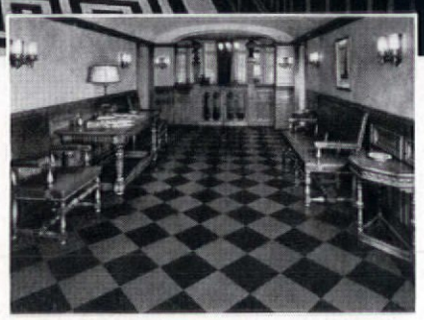


Reception Hall, Seagram Distillers Corp., Chrysler Bldg., N. Y. City. Floor is Armstrong's Rubber Tile in No. 400 White Marble with No. 455 Verde Antique squares. Border is No. 410 Oyster and No. 480 Black.

FOR the floors of Seagram's new executive offices in the Chrysler Building, Architect Morris Lapidus had very definite requirements to meet. Seagram's wanted floors that would not only reflect the character, dignity, and luxury of the interior scheme, but would also give long service and be easy to maintain. Mr. Lapidus found exactly what was needed in Armstrong's Rubber Tile, Cork Tile, and Linoleum.

Armstrong offers the only complete line of resilient floors. Among them you'll find materials to suit every pocketbook. *Linotile*—an exclusive Armstrong product—is a long-wearing floor twice as resistant to indentation as Battleship Linoleum. *Rubber Tile* is a specially-reinforced tile with a beautiful high finish. *Cork Tile* is a rich, comfortable floor possessing high sound-deadening qualities. *Accotile*—a low-cost moisture-resistant tile—is for use wherever floors are in direct contact with the ground. And there are hundreds of Armstrong's *Linoleum* patterns for every type of building.

With this complete line of resilient floors, the Armstrong Architectural Service Bureau can give unbiased suggestions on the correct type for any building. For more complete information, see Sweet's or write direct to Armstrong Cork Products Company, Building Materials Division, 1204 State Street, Lancaster, Pennsylvania.



In the lobby of the Seagram executive offices, a luxurious floor of Armstrong's Cork Tile, in two shades of brown, insures freedom from noise. Layout of the office is by Ross-Frankel, Inc., N. Y. C.



General Offices at Seagram's. The No. 05 Brown Marbelle Armstrong's Linoleum Floor insures underfoot comfort and quiet for busy employees.

ARMSTRONG'S *Linoleum* *and* RESILIENT TILE FLOORS

LINOTILE · ACCOTILE · CORK TILE · RUBBER TILE · LINOWALL · ACOUSTICAL CEILINGS

LETTERS

Rent to Space

Forum:

I am very much interested in your article on Apartments in the June issue.

May I refer you to page 451 at the bottom where you discuss "Costs of Use"? May I ask if you have any data on breakdowns of this charge? You use a figure of $42 per room per year, and state this includes certain items. Can you give me any data on a make-up of this figure or on figures to be used in connection with the correct analysis of apartments which your article outlines so clearly?

LUTHER R. HOFFMAN

Grosse Pointe Park, Mich.

The second installment of "Rent to Space," (ARCH. FORUM, July, 1936) shows how Cost of Use can be broken down into the elements which compose it and illustrates this with cost figures. The actual figures, however, will vary from place to place and with different types of apartments.—ED.

Hot Spots

Forum:

. . . It is a known fact that the home for the average family in this section, built to sell for around $5,000, is somewhat copied after hurriedly built homes in Southern California of several years ago, and which fails to take into account the scorching heat of this desert country. This type of home, built the thickness of two bricks, and a low roof, with plenty of windows, and usually little or no shade, is entirely unsuited for this country, and it appears to the writer that someone, somewhere, has designed a home of moderate price for these hot countries, which, even without the installation of a cooling system, would be fairly comfortable during the summer months.

We find in Tucson, Ariz., one of the oldest towns in the U.S., in the older section, buildings, built by the Mexicans, with thick adobe walls, few windows, which we are informed by old timers had an unusually thick roof, usually made of poles, mud, and straw. There are several of these buildings in the town of Florence, Ariz., one of the many hot spots during the summer in this State, and these buildings, which are still standing, are quite cool in summer. Yet, it is our observation that the builders of this section have not, and are not taking into consideration the principles involved and which were used by these people many years ago . . .

We have lived in several "Southern California Type" homes and our experiences with them are that they were built for ready sale by contractors, and have not had included in their design building methods which would add to the comfort of the inhabitants during the long, hot, summer days and nights . . .

It is also our observation that the few adobe homes now being built here are in the higher priced brackets and that contractors are continuing with the aid of Federal funds to throw together attractive-appearing houses to sell for around $5,000 with not one thought of including in the design basic principles which evidently the Mexicans knew so well many years ago.

We wonder if any home designer has given this matter any thought.

FORREST E. DOUCETTE

Phoenix, Ariz.

Advertising the Architect

Forum:

I am inclined to be absent minded, and so when I attend conventions of architectural societies I sometimes blunder into a business meeting. Before I can collect my faculties and escape I have to listen to a portion of the speech then being given. Frequently this speech has to do with Advertising the Profession. In general, architects who make speeches on this subject are committed to two hypotheses that leave me cold; they believe (a) that advertising the architectural profession should be financed by using somebody else's dough, and (b) that the advertising should be Dignified.

Regarding (a) I can only remark that an extensive survey of the advertising field leads me to suspect that the manufacturer who will spend any serious money advertising something for somebody else has not yet appeared on the horizon and that when he does his relatives will probably start thumbing through the telephone directory in search of a good psychiatrist.

Now for (b). Dignity is an excellent thing in advertising but it has the minor disadvantage that it doesn't sell anything. If you will analyze the advertising done by many of our most successful manufacturers you will note that their display advertising is based on the good old theory of scaring the customer half to death. A customer well frightened is at least half way to the drug store to buy your product.

Let me show you what I mean by citing a typical example of a modern selling technique.

We will assume that your name is Ezekiel W. Zunk (God forbid), and that you manufacture the Zunk Electric Ironer. You harbor the ambition to sell these useful products in large numbers to the nobility and gentry of this republic, so you hire an advertising agency to get to work for you.

What is the first thing your advertising counsel does? Well, not the first thing; of course the first thing they do is to ask for a retaining fee, but the second thing they do is to put their art department at work preparing a lay-out of an advertisement to be run in four colors in six or seven magazines. The most noticeable feature of the advertisement is a "strip," a series of four pictures.

The first picture is captioned "Don't Let 'Ironing-board Itch' Destroy Your Home," and shows a housewife bending wearily over an ironing board, scratching herself with a flat iron.

The second picture introduces the housewife's husband; he is saying to her, "How come you are always too tired to attend the annual oratorio of the 14th Street Chopin & Chowder Club with me?" He is accompanying his question with a dirty look and the housewife is weeping bitterly.

The third strip shows one of the neighbor women putting in her 5 cents' worth. "Why don't you get a Zunk Electric Ironer on dignified deferred payment terms and end this drudgery?" she wants to know.

The fourth and last strip is captioned, with chaste simplicity, "Sweethearts Again." The housewife looks at least 25 years younger; her husband is handing her $11 worth of orchids across the new ironer and remarking passionately, "Phooey on Claudette Colbert! You are far more beautiful than she since the Zunk Electric Ironer entered our little love nest."

Under the strip is a restrained sales talk in 36 point Bodoni Bold pointing out that living in a house that lacks a Zunk Electric Ironer is socially on a par with camping out on the city dump.

You see how it goes?

By adopting this technique and spending a small sum, say $6,000,000, we architects could launch a campaign that would strike terror to the hearts of every American living in a house that was *not* designed by an architect. Imagine a strip showing the whole family coming down with "Contractor's Coryza" or "Lumber Dealer's Lumbago" as the result of living in a house that was brought into the world without an architect to assist at the accouchement! The effect would be little short of terrific.

Any smart copy writer (me, for instance) could produce startlingly effective advertisements based on the accepted theory that women, who are the potential purchasers of all homes (or at least the instigators of all such purchases) can be divided into two classes; those who want to get married and those who want to stay married (a possible third class, the members of which are saving up for a divorce, is temporarily out of the market).

Does it seem far-fetched to you that architectural services should be held out as a means whereby any single gal can be assured of a husband who owns a valuable collection of etchings and some expensive bridgework? Or, if the lady is married, that architectural services will infallibly prevent her husband from smirking at waitresses or, in Winchellese, "three-alarming over one of the French Casino choristers?" If it does, let me assure you that many more far-fetched tie-ups than this have frequently gone to town.

The possibilities of such a campaign are endless. The expense would be endless, too.

ROGER ALLEN

Grand Rapids, Mich.

Architect Allen will please turn to page 79.—ED.

MORRISON HOTEL'S CHIEF ENGINEER

OK's TRANE COILS



Engineer Hancock, Governor of a small city of power equipment and other machinery four stories below the Morrison's Ground Floor.

"Trane Blast Heaters Give Perfect Service" says Chief Engineer Hancock

"About five years ago when we built a new section to the Hotel we had the problem of distributing evenly heated fresh air into the larger rooms. The Architects and Engineers got together and decided that for operating economy and all around efficiency, Trane Blast Heater Coils were the answer."

Five Years of Perfect Performance

"Now after more than five years I can add my word —that the Trane Equipment has delivered perfectly without a moment's trouble of any kind—and I am confident will stand up equally well for many years to come."

CHAS. HANCOCK
Chief Engineer, Morrison Hotel



Chicago's famous Morrison Hotel at Madison and Clark—Home of equally famous Terrace Room.

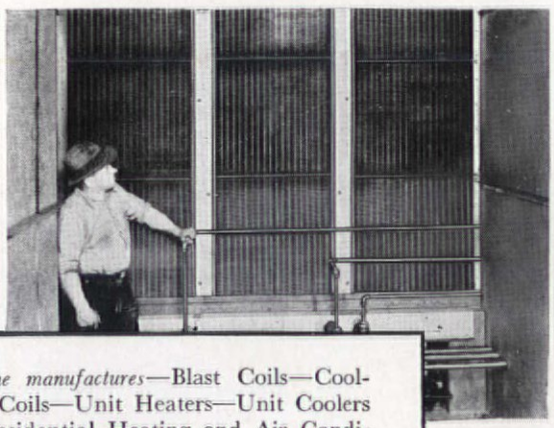
The Mirror Room

The English Room

Two of the rooms where Trane Heating and Ventilating Equipment helps to keep patrons comfortable.

TRANE "EXCLUSIVE FEATURE" COILS

When excess capacity is required these Trane "Exclusive Feature" Blast Coils are the choice of leading architects, engineers and building contractors—The Patented Trane Guide Flange (relieves stress and strain), The Patented Trane Process of Bonding Tubes to Fins without welding, soldering or brazing (permits lighter weight—greater efficiency). Trane's line of Blast Coils is the most extensive on the market—and Trane Bulletins are the most complete, authoritative and easily understood published by any manufacturer of coils. (Makes selection of exactly the right coil for any requirement easy.)



These giant Trane Blast Heating Coils in the Morrison Hotel have been delivering evenly tempered air at low cost for more than five years.

You will save time if you

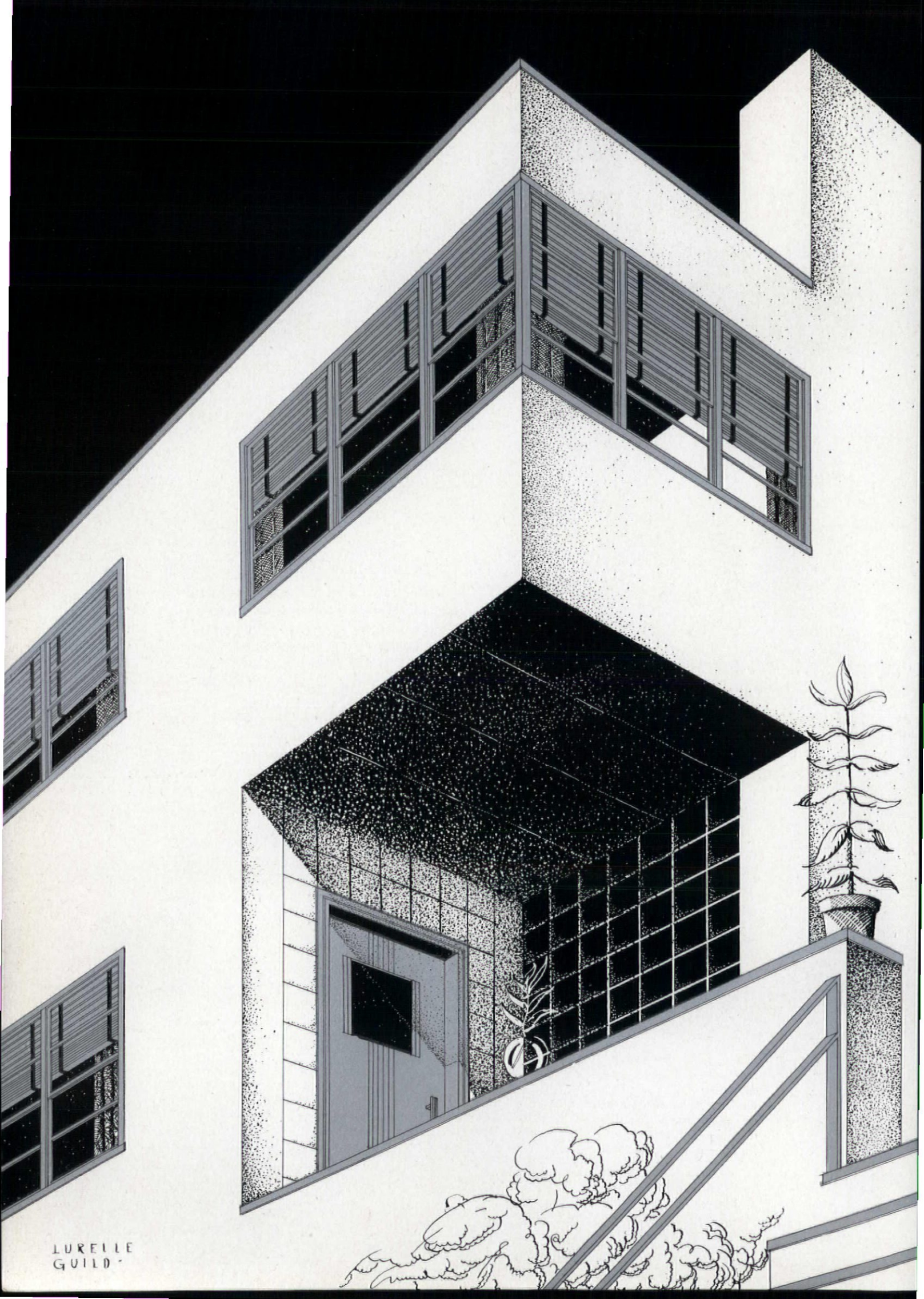
Ask Trane First

—about all matters pertaining to industrial, commercial and home air conditioning problems involving the use of Blast Heating Coils, Unit Heaters, Heating Specialties, Cooling Coils, Cooling Units or Product Coolers.

FILE THESE FACTS!

Trane manufactures—Blast Coils—Cooling Coils—Unit Heaters—Unit Coolers—Residential Heating and Air Conditioning Systems—Evaporative Condensers—Vapor and Vacuum Heating Specialties—Condensation and Circulating Pumps—Schoolroom Ventilators.

The Trane Company *Branches in all principal cities*
La Crosse, Wisconsin. (In Canada—Mowat & King Sts., W. Toronto)


LURELLE
GUILD

FOR WHAT WINDOWS ARE FOR

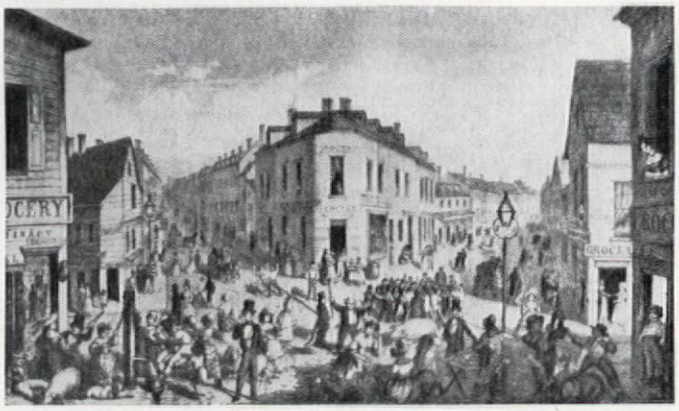
•

HOWEVER you approach fenestration of the small house, the new Aluminum double-hung window is the perfect answer ★ To the facade, these windows add a crisp accent of sheer, unadorned beauty ★ The small, strong sections increase the effective glass area ★ Precise dimensions and advanced design make the very light sash easy to operate, yet forever tight to the elements ★ The surface of Aluminum needs no protective painting. There can be no staining of adjacent surfaces. Upkeep is truly negligible. When you take all of these facts into consideration, their cost is decidedly moderate ★ Several manufacturers now offer their own design of double-hung windows fabricated from Alcoa Aluminum. Names of these manufacturers gladly sent upon request ★ Aluminum Company of America, 2166 Gulf Building, Pittsburgh, Pennsylvania.

ALUMINUM • ALCOA

BOOKS

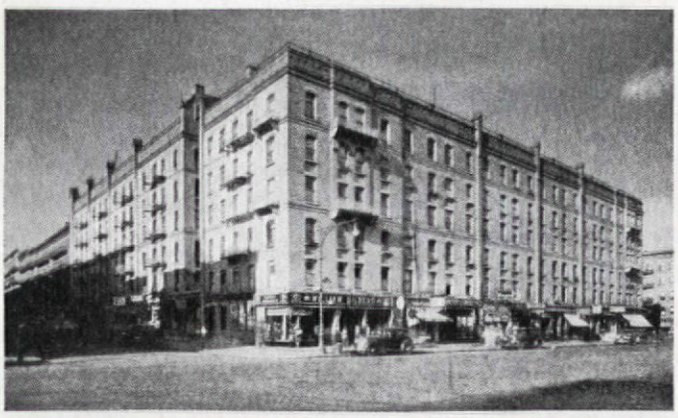
A monumental study of the slum and what has been done about it . . . . colored interiors . . . . graphic design . . . . slum clearance, and equipment for small dwellings . . . . a super-manual for the drafting room, from Germany.



A view of Five Points in 1827. Near the present financial section, this area was the most notorious slum of its time, "resort of the abandoned of all nations."



Typical old-law tenements: dwellings originally built as cottages for one or two families. On the right is an early form of the "barrack," one of the first tenements.



The first group of model tenements in Manhattan, built 1879-81. They are still superior to the dwellings of nearly 1,000,000 New Yorkers.

SLUMS AND HOUSING, by James Ford with the collaboration of Katherine Morrow and George N. Thompson, Harvard University Press, Cambridge, Mass., 2 vols., 10½ x 7½, 1,033 pp., $10.00.

Dealing primarily with New York's housing problem and its history, this monumental study has a wide scope. It contains an exhaustive treatment of the slum, its exact definition, causes, social and economic consequences, and physical characteristics. It reviews almost every type of housing endeavor, including the European projects, and presents a surprising amount of good precedent in America, generally ignored by writers on housing. For its admirably detached attitude as well as its documentary value, the work of Dr. Ford and his associates should be a valuable antidote to much of the loose thinking on this complex subject.

The first section is a history of New York, with a wealth of descriptive material on living conditions during different periods of its growth. The chapters on the development of the tenement, the rise of consciousness of the slum problem, and the attempts at reform create a background indispensable to the planner today. Documents are quoted to show the frightful conditions that prevailed in the 1800's, and which, to a lesser degree, still exist, but there is no attempt to blacken a picture already sufficiently dark. The blame for these conditions is not laid on any one class: tenant, landlord, architect, lawmakers, and city officials are all found equally culpable. In his recommendations for reform the author does not suggest any revolutionary action, insistent as he is upon the necessity of eliminating the slum. For example, in the matter of slum clearance: ". . . So much for the legalistic phase of demolition. To those impatient for clearing away outmoded structures with certainty and dispatch, it appears to be a phase characterized by too many niceties and offering too many loopholes for recalcitrant property owners. Yet it is an outgrowth of typical Anglo-Saxon solicitude for absolute fairness to all parties and guarantees against arbitrary action." This mildness is not pussyfooting, however; Dr. Ford leaves no doubt as to his own convictions in the matter: "There can be no solution of the slum problem until the primacy of public interest over private interests and property is recognized and incorporated in the thought habits of our people and in fundamental law."

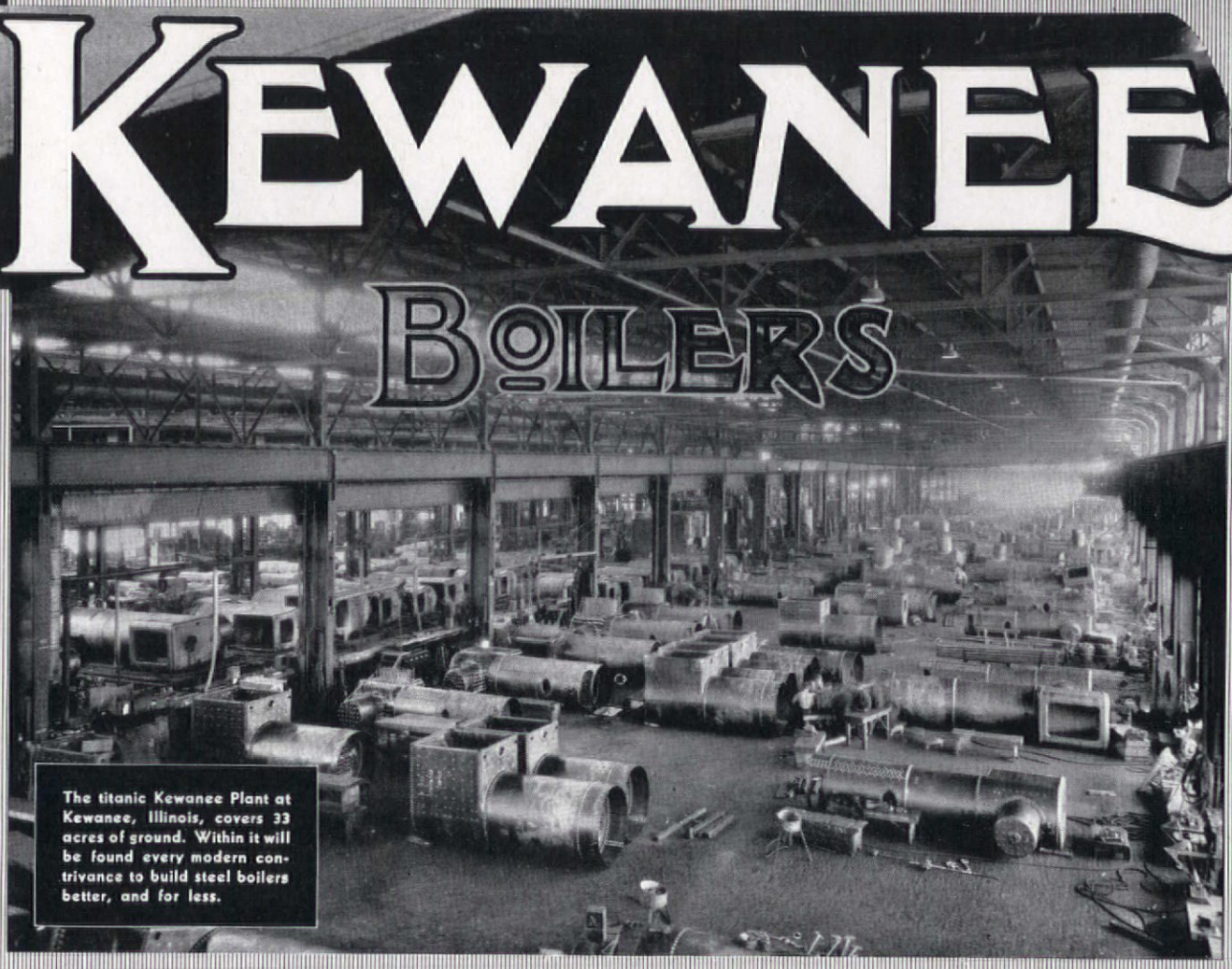
Great emphasis is laid by Dr. Ford on the force of aroused public opinion. No housing endeavors of any magnitude have succeeded without it, and the book contains ever-repeated admonitions to would-be reformers that leadership and a clear popular understanding of the vital importance of a constructive housing program are necessary if any progress is to be made.

In the chapter on Federal housing a number of projects are examined, but there is neither approval nor condemnation expressed: "It is easy to specify that financing should be sound, that Government should not invade any field of operation that private business can handle satisfactorily . . . but when asked in which respects the Federal Government or any of its branches have failed, the only fair and discriminating response is that the available data do not reveal the answer."

Like others who have studied the subject, Dr. Ford concludes that some form of Government participation in housing and slum clearance is required if large-scale work is to be done, but he indicates a preference for private, municipal, and

(Continued on page 62)

KEWANEE BOILERS



The titanic Kewanee Plant at Kewanee, Illinois, covers 33 acres of ground. Within it will be found every modern contrivance to build steel boilers better, and for less.

THERE ARE MORE KEWANEE BOILERS

68 years ago

68 years ago Kewanee started to build heating boilers, and right from the start furnished most of the steel boilers used within many a hundred mile radius.

Today...

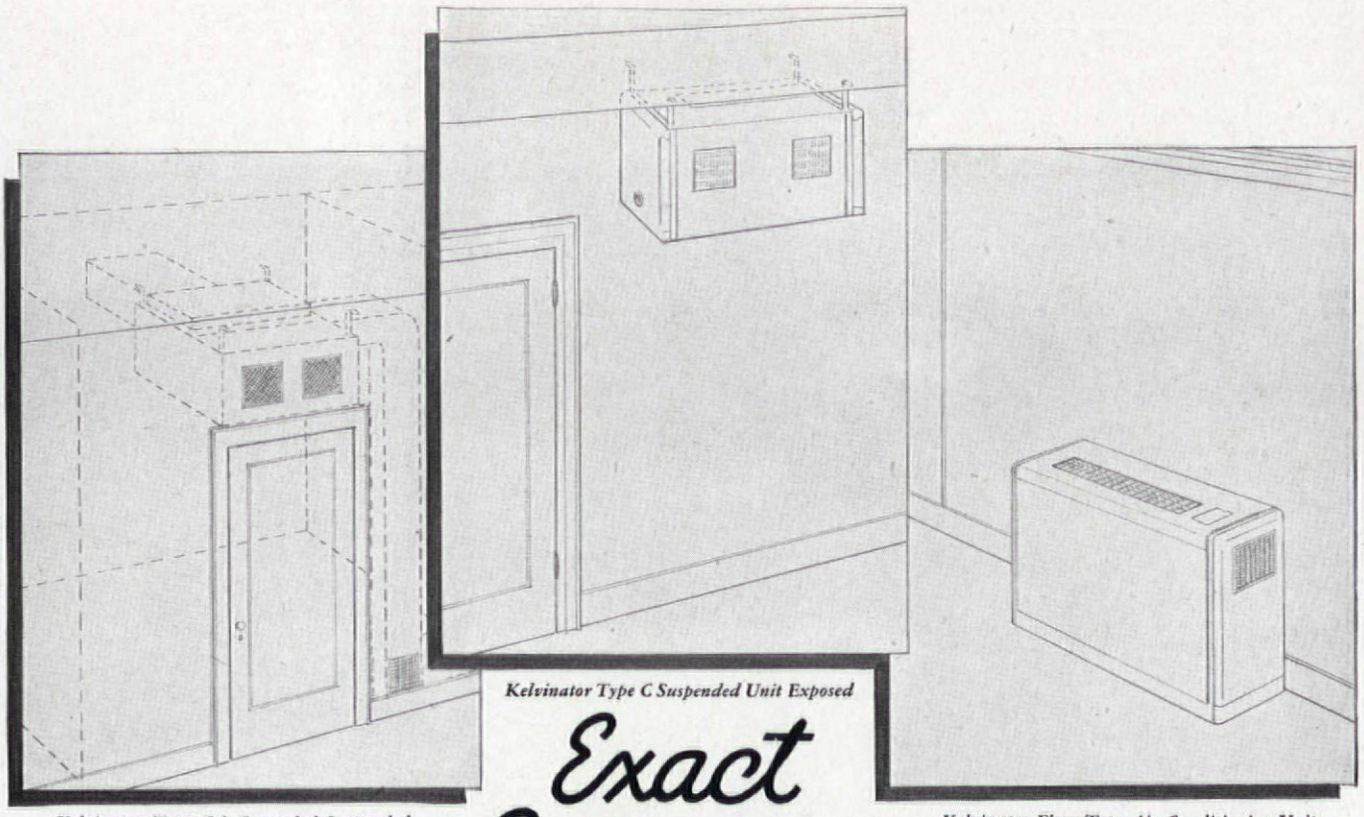
Kewanee is building the big percentage of steel heating boilers installed in a territory that has steadily expanded to the limits of the National Domain.

There are More Kewanee Boilers heating good buildings than all other makes combined—*There Must Be a Reason . . .*

There is . . . a simple one. Owners have learned that regardless of the size of their building, or the fuel they use, the success of every heating and air conditioning system depends primarily on the boiler. *They know they can rely on Kewanee.*

KEWANEE BOILER CORPORATION KEWANEE, ILLINOIS
Branches in Sixty-one Principal Cities

Eastern District Office, 37 West 39th Street, New York City
division of American Radiator and Standard Sanitary Corporation



Kelvinator Type CA Concealed Suspended Air-Conditioning Unit

Kelvinator Type C Suspended Unit Exposed

Kelvinator Floor Type Air-Conditioning Unit

Exact Selection

means the right type, the right size, and the most economical EQUIPMENT FOR EACH AIR CONDITIONING JOB

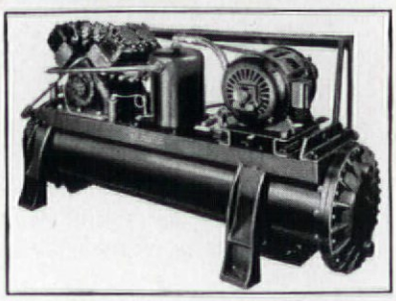
● Sketched above are three typical applications of Kelvinator units in buildings that were not originally designed for summer air conditioning.

Kelvinator concealed units in all needed sizes fit into unused overhead space in coat closets, washrooms or adjoining space. Kelvinator overhead units are suspended from the ceiling right inside the rooms that are to be air-conditioned. Kelvinator floor units may be installed at any wall or partition. All can be served by the same Kelvinator condensing unit located in the basement or other low-rent space.

Kelvinator has developed a complete selection of unit-type air conditioners for use in new or existing buildings, in sizes to fit each job exactly. You never have to use equipment that is larger than required, at a penalty in cost, or a unit of doubtful capacity at a sacrifice of performance. That's Exact Selection—something more than a catch-word or slogan.

The economies of Exact Selection also are available in Kelvinator self-contained air-conditioners and room coolers, and in Kelvinator central plant equipment employing duct distribution for buildings of all sizes. *The right type, the right size of equipment* to fit the specific requirements of each job exactly!

Kelvinator Exact Selection insures maximum economy in equipment and operating costs, plus assurance of adequate capacity. Kelvinator design, backed by 22 years of experience in temperature control, guarantees dependable performance. Kelvinator engineering co-operation is guided by broad experience in applying air conditioning in every type of public and commercial building. Kelvinator Corporation, Air Conditioning Division, 14250 Plymouth Road, Detroit.



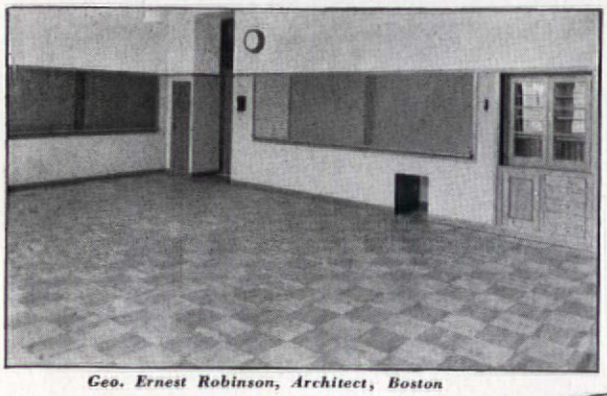
Kelvinator Condensing Units, in individual capacities up to 20 tons, can be installed in multiple or in separate systems, to meet requirements of any size

Kelvinator

AIR CONDITIONING

EVERYWHERE YOU SPECIFY IT—MAPLE MAKES FAST FRIENDS

Owner-satisfaction doesn't vary, whether you specify Northern Hard Maple floors for school, store, factory, home or ballroom. In all cases, Maple's remarkable wear and ease of cleaning wins fast friends. Finishes adapted for every requirement are available—penetrating heavy-duty finishes which seal Maple's surface, eliminate scrubbing and maintain its smoothness—attractive color finishes which enhance Maple's natural beauty and fit into any decorative scheme. In *any* building, Northern Hard Maple constantly testifies to your good judgment in specifying it.



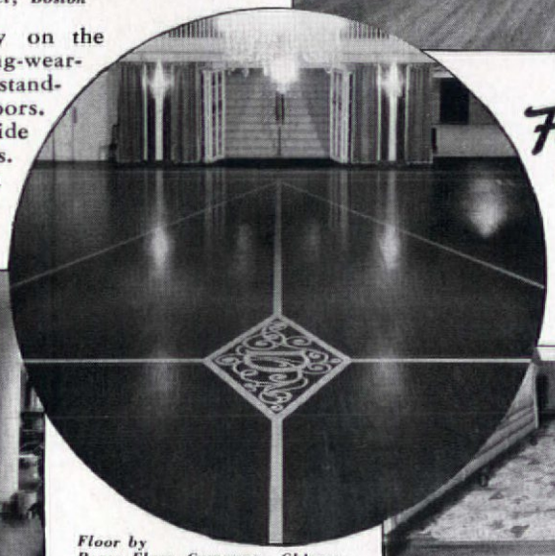
Geo. Ernest Robinson, Architect, Boston

Schools Warm, "easy on the feet," and long-wearing, Hard Maple is a standard specification for school floors. Sizes and designs available provide many opportunities for patterns. Above, a block Maple floor in the Jeremiah E. Burke High School for Girls in Boston.



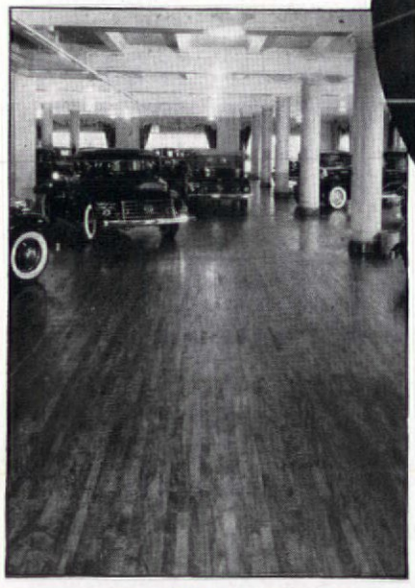
Lockwood Greene, Engineers, New York

Factories Hard Maple's unequalled resistance to indentation and abrasive wear, makes it the choice for most factories. Practically all plants of the U. S. Rubber Company are floored with Maple. Above, the G & J Tire Co. division, at Indianapolis.



Floor by Pease Floor Company, Chicago

Ballrooms Maple is the accepted floor for dancing. Lastingly smooth and durable, it has natural beauty and will readily take transparent color finishes. Above, in the Grand Ballroom of the Drake Hotel, Chicago, the Northern Hard Maple floor is finished in opaque black and silver.



Stores The Maple floor in this dealer show-room was 10 years old when photographed. Resanded and color-finished, the floor is still in perfect condition. Maple's tight grain develops no "pits" to catch dirt—brushing will keep it clean—thus it is sanitary and economical to maintain.



Auler, Jensen and Brown, Architects, Oshkosh

Homes Generations after installation, Maple maintains its natural beauty—needs only refinishing for new-floor appearance. When two rooms in an Oshkosh, Wisconsin, home were combined into the one room shown above, 35-year-old Maple was so perfectly matched with new Maple that the eye cannot tell the difference. (Both the old and new Maple appear above.)

Be familiar with all grades of MFMA Maple and where to use them. Write for 1935 edition grading rules and complete specifications for laying and finishing.*

Floor *with* Maple

*The letters **MFMA** on Maple, Beech or Birch Flooring signify that the flooring is standardized and guaranteed by the Maple Flooring Manufacturers Association, whose members must attain and maintain the highest standards of manufacture and adhere to manufacturing and grading rules which economically conserve these remarkable woods. This trade-mark is for your protection. Look for it on the flooring you use. **MFMA**

MFMA Approved

MAPLE FLOORING MANUFACTURERS ASSOCIATION

1796 McCormick Building, Chicago, Ill.

See our catalog data in Sweets, Sec. 15/53. Let our service and research department assist you with your flooring problems. Write us.



IRON FIREMAN information at your finger-tips

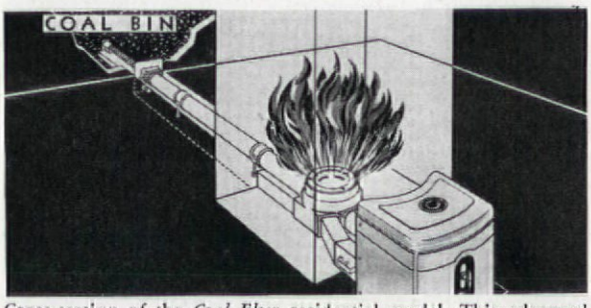
12 page illustrated catalog in "Sweet's"

With the realization that coal has taken its place in modern building as an *automatic fuel,* there is a rapidly growing interest in the automatic coal burners that Iron Fireman makes for homes, business buildings, factories and institutions.

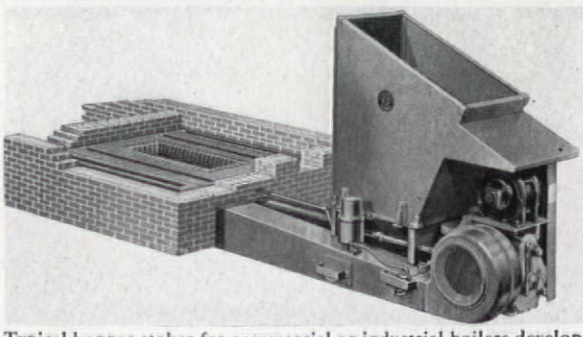
In order that this information can be available in handy, concise form, Iron Fireman has a 12-page illustrated catalog in Sweet's. It includes a brief presentation of the development of automatic coal firing and of the size and scope of the Iron Fireman Manufacturing Company, world's largest makers of automatic coal firing equipment. Basic data covers Iron Fireman residential burners, both bituminous and anthracite, in Hopper and Bin-Feed models. In the commercial and industrial field, data and illustrations cover Iron Fireman models for boilers developing up to 300 h.p. There is a section on Iron Fireman burners for special applications, such as bake ovens, restaurant ranges, metal melting pots, etc. And last, but by no means least in importance, there is a section in which a typical Iron Fireman model is taken apart and the various items of mechanical superiority are illustrated and explained.

When you want information on Iron Fireman for new building projects, or for modernization, reach for your Sweet's. And if further data is needed, a phone call to your Iron Fireman dealer or a letter to the factory at 3066 West 106th St., Cleveland, will get prompt action. Iron Fireman Manufacturing Company. Factories: Cleveland, Ohio; Portland, Oregon; Toronto, Canada. Dealers everywhere.

Standard residential hopper model. For warm air furnaces, hot water, steam or vapor-vacuum boilers, new or old.



Cross-section of the *Coal Flow* residential model. This advanced burner feeds coal direct from bin to fire, abolishing all coal handling.



Typical hopper stoker for commercial or industrial boilers developing up to 300 h.p. Also available in Bin-Feed models.

IRON FIREMAN AUTOMATIC COAL FIRING EQUIPMENT

Clean Air

for COTTAGE  or CASTLE 

DUST-STOP Air Filters are available for low-cost warm-air furnaces, through the entire price range, including the most elaborate air-conditioning system.

FOR AIR-CONDITIONING SYSTEMS AND UNITS . . .

Leading manufacturers of this equipment recognize the unique filtering qualities of DUST-STOP Air Filters and have engineered them into their products

FOR SPLIT SYSTEMS . . .

DUST-STOP Air Filters play their important part in the CLEAN-AIR-IN-MOTION phase of split systems.

FOR FORCED WARM-AIR FURNACES . . .

The majority of the manufacturers of blower equipment have adopted DUST-STOP Air Filters as standard equipment.

FOR GRAVITY WARM-AIR FURNACES . . .

Effective filter-boot applications for this popular-priced heating system.

• • •

Owens-Illinois Glass Company, 307 Madison Avenue, Toledo, Ohio.
In Canada: General Steel Wares, Ltd., Toronto.



Also for commercial and industrial central and unit heating, ventilating and air conditioning.

DUSTOP

REPLACEMENT-TYPE

Air Filters

A Warning

to all persons interested in AIR CONDITIONING

You are not getting true air conditioning unless you get, at least, these services:

***FOR SUMMER AIR CONDITIONING**
at least

1. The air must be cooled.
2. It must be dehumidified.
3. It must be circulated.

***FOR WINTER AIR CONDITIONING**
at least

1. The air must be heated.
2. It must be humidified.
3. It must be circulated.

***FOR YEAR-ROUND AIR CONDITIONING**
at least

1. The air must be cooled and dehumidified in summer.
2. It must be heated and humidified in winter.
3. It must be circulated.

Most air conditioning, in addition, cleans the air

Any equipment performing less than these minimums is not true air conditioning

NO ONE today questions the tremendous benefits of modern, scientific air conditioning . . . its great contributions to human health and comfort . . . the industrial improvements and economies it has made possible. Commercially, it pays unusually high returns in increased patronage, employee health and efficiency.

Careless, misleading use of the terms "air conditioning" and "air conditioners" has caused much confusion: There are on the market today appliances which may perform one or more of the functions of *true* air conditioning, yet which do *not* perform the minimum necessary to properly merit the name "air conditioning." Many of these appliances efficiently and usefully perform the limited functions for which they are intended, but when they are called "air conditioners," more is promised than can be fulfilled. Only with *true* air conditioning can full benefit be obtained.

For the protection of your investment and for your personal satisfaction, insist on *true* air conditioning—which means at least the services listed above.

*DEFINITIONS USED BY THE UNITED STATES DEPARTMENT OF COMMERCE AND THE NATIONAL BETTER BUSINESS BUREAU.

RELIABILITY ACMA EXPERIENCE AIR CONDITIONING MANUFACTURERS' ASSOCIATION

This advertisement is sponsored jointly by the Air Conditioning Manufacturers' Association and by Kinetic Chemicals, Inc.

"All Electrical Conductors must be SAFECOTE!"



THE TRADE-MARKS OF THE MANUFACTURERS AUTHORIZED TO MAKE AND SELL SAFECOTE ELECTRICAL CONDUCTORS

AMERICAN STEEL & WIRE COMPANY — Subsidiary U.S. Steel

PARANITE WIRE & CABLE COMPANY

PHELPS DODGE COPPER PRODUCTS CORPORATION — HABIRSHAW

CRESCENT INSULATED WIRE & CABLE CO., INC.

GENERAL CABLE — GUARDIAN

BISHOP WIRE & CABLE CORPORATION

GENERAL ELECTRIC COMPANY

ANACONDA WIRE & CABLE COMPANY

SIMPLEX WIRE & CABLE CO.

COLLYER INSULATED WIRE COMPANY

NATIONAL ELECTRIC PRODUCTS CORPORATION

HAZARD

PROVIDENCE INSULATED WIRE CO., INC.

CLIFTON CONDUIT COMPANY

THE M. B. AUSTIN COMPANY

UNITED STATES RUBBER PRODUCTS, INC.

TRIANGLE CONDUIT & CABLE CO., INC.

ROEBLING SAFECOTE — JOHN A. ROEBLING'S SONS COMPANY

WHAT is the simplest and best formula to solve your electrical wire problems. Safecote wire is built to a standard which embodies all the qualities you have been the habit of writing into your specifications — plus four important features:

FLAME-RETARDING . . . will not carry flame.

MOISTURE-RESISTING . . . hermetically sealed against such destructive agents as moisture, light, and air. Condensation in conduits will not affect it; improves with age.

FISHABLE, SLICK FINISH . . . patent-leather-like finish — easy to pull into conduits — more wire possible in a given size conduit.

FADELESS FAST COLORS . . . permanent circuit identification.

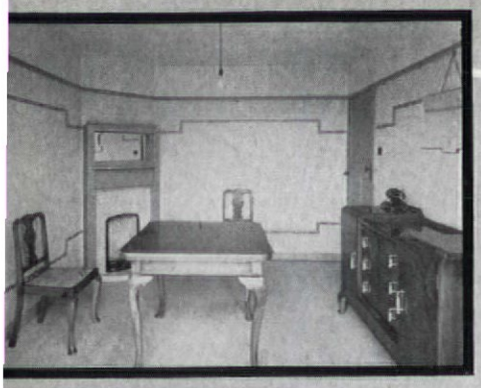
The Safecote Laboratories guard these standards.

Today there is no need for elaborate wire specifications; just say, "All electrical wires must be SAFECOTE".

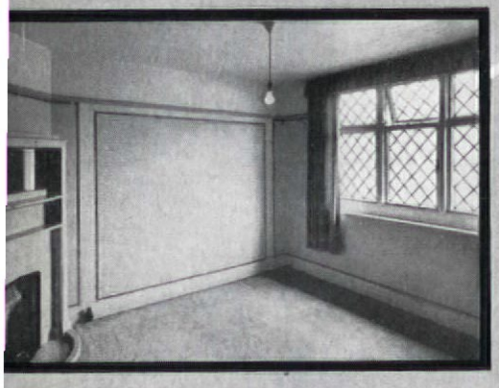
THERE IS NO SUBSTITUTE FOR SAFECOTE

SAFECOTE PERFORMANCE SPECIFICATIONS AVAILABLE UPON REQUEST • SAFECOTE LABORATORIES ARE AT YOUR DISPOSAL

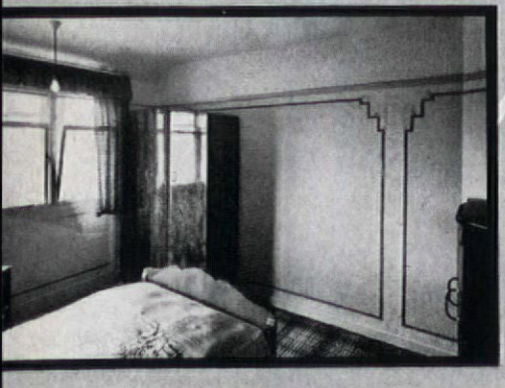
GEORGE C. RICHARDS, LICENSOR'S AGENT • 155 EAST 44th STREET, NEW YORK CITY

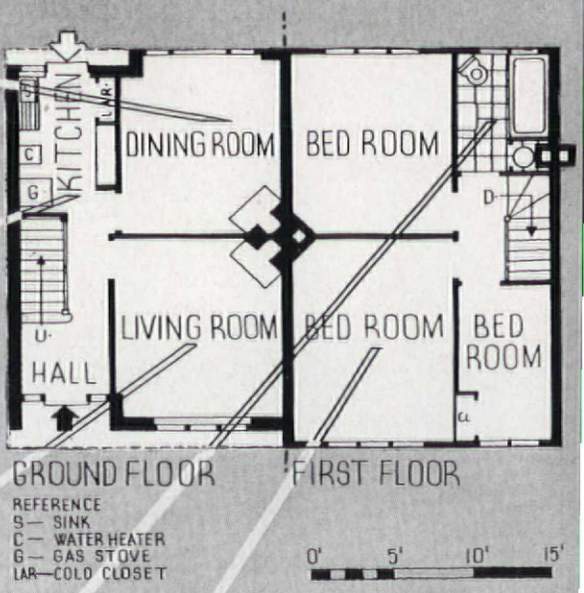






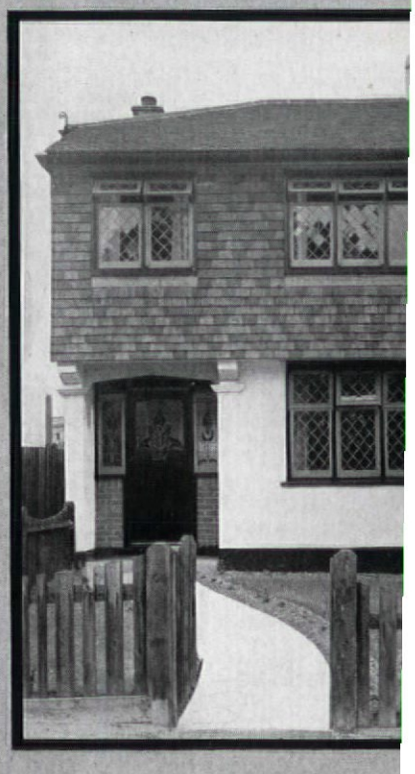






Here are the insides and the outsides of an English house which sells for $2,500. This is an average price and an average house in the British building boom which produced 3,000,000 new homes in 17 years. A by-product: 2,000,000 new gardens.





BRITAIN'S BUILDING BOOM

Part 1: The State vs. Private Enterprise in Building. The Origins and History of the State in Building. The Subsidy. The State Builds 860,000 Homes. The Home. Private Enterprise Builds 1,500,000 Homes. Private Enterprise's Home. The Market.

Part 2: (September) The Mechanics of a Boom. Construction Methods. Labor. Costs. The Brick Industry. The Architect. The Mortgage Market, Its Size, Methods, Past and Future. Four Causes of the Boom. Britain's Boom and the U.S.

On June 16 the Right Honorable Sir Kingsley Wood, Minister of Health to His Majesty King Edward of England, announced that the number of dwellings built in England and Wales since January 1, 1919, had passed the magnificent total of three million. The figure is undeniably large; but it must be placed in its environment and historical context to reveal its full purport. Thus:

In January, 1919, there were standing in England and Wales eight million dwellings. Therefore the three million post-War houses represent more than a quarter of all dwellings now standing in England.

Of these three million dwellings, 1,319,000 were built within the last five years. During the same period the U. S., with a population three times as great, built only one-third as many.

Ninety per cent of these three million homes cost, with land, less than $4,000; 60 per cent cost less than $2,500. None has fewer than four rooms. About two million of them have gardens.

Private enterprise built over half of the three million dwellings without any assistance; another 423,000 it erected with the help of a Government subsidy. The Government itself, through local authorities, built and owns the remaining 861,000.

You can dazzle yourself almost indefinitely in this manner with Sir Kingsley's statistic. And yet the most dramatic implication of that statistic lies not in any numbers, but in the visible, brick-and-wood fact of the homes* themselves. They consist of a great many two-, three-, and four-family houses; of a lesser number of free-standing single houses; and of a relatively negligible number of apartments. They have changed the face of the land, which is now subtly informed by the fact that every new house you see is almost certainly within your means. Today any skilled laborer or any alpaca-coated accountant can own a home in England.

And then there is the greenery. Walk in the older part of any English city and you walk in the gray and suffocating rectangulation of row houses packed tight against sun, air and grass. Walk in most of the boom-built area and your road follows the sweet curves of old meadows and, arching around cul-de-sacs, comes on sudden parks and commons, bright green and quiet. Most of the houses you see are the two-family type and you won't often find more than eight or ten of them to the acre. (Think, for instance, of a Chicago suburb for comparison.) There are 37 million acres of land in England, and on 17 million of them there is already imposed the restriction of not building more than eight dwellings to the rural acre, twelve to the urban.

The average of the three million new dwellings is one-half of a two-family house, occupying both first and second floors. It has three bedrooms, a parlor, a kitchen, a bath, and a garden, and yet you yourself would certainly consider it below both your and the "American" standard for new housing. But last year Englishmen established an all-time record by making their down payments on 318,000 of them.

THE GOVERNMENT BUILDS

These facts are all significant but they only describe, they do not explain, the English building boom. To understand that boom at all, you must first ponder the fact that the British Government has contributed a partial subsidy toward the building of nearly half of the post-War houses. In the last 17 years, up to February, 1936:

The national government has helped city governments by subsidy to build 861,000 homes.

The national government has helped private enterprise by subsidy to build 425,000 homes.

Private enterprise has built the remaining 1,550,000 by itself without benefit of subsidy.

Thus, recapitulating, the British Government has subsidized better than 1,300,000 of the total of three million homes built since the War. It is with these 1,300,000 subsidized homes that we will deal here; and most particularly with the 900,000 built by the Local Authorities of the city governments. Reserved for later discussion are the 1,550,000 homes both financed and built by private enterprise alone.

These 1,300,000 subsidized homes are in detached houses, in row houses and in apartment buildings. With one exception to be noted later, they are all for rent rather than for sale. And they constitute the major part of all post-War building up to the year 1930. For your guidance, here is a rough rule of thumb: Before 1930, two subsidized houses were built for every one built by private enterprise; after 1930 two houses were built by private enterprise for every one built with subsidy.

The subsidizing of 1,300,000 homes is a major fact in any economy; in England, as on all the Continent, it happens to be an everyday fact. For European countries are deep in the business of housing, not as some PWAiding gesture, but just as deeply as, say, the Levitt Brothers of Long Island or Walter S. Schmidt of Cincinnati. When you thoroughly appreciate this unconventional fact, you will be able to understand what Catherine Bauer meant in her definitive *Modern Housing*, when she wrote of the post-War boom: "If there had been no organized political demand on the part of the people who needed good housing, there would have been no such achievement." Whereas the U. S. Government builds only to salve its social conscience, the British Government builds to ease its political neck. It began doing so about 80 years ago.

In the middle of the Nineteenth Century, England was perhaps the world's most hearty exponent of the Manchester Doctrine, which held that nobody was responsible for the lower classes but the lower classes. In England this thesis was interpreted to mean that the slum was inviolate, but abroad, especially in Germany, the duty of the municipality to provide housing for its lower class workers had long been recognized. And although Octavia Hill, as late as 1874, was to counsel her sister slum-lifters not to insist on water for every floor, and although Malthus was bemusing the world with a theory which implied that the poor would forever die like flies, there were other contrary signs that social indulgences were soon to become social duties. The French deification of the wants of "l'homme moyen sensuel" had crossed the Channel; and in 1848 there was published the Communist Manifesto. The balance of power ("the haves vs. the have-nots," "the gentry vs. the under-privileged") was delicate, was already tipping; in 1848 it was forever upset.

In that year cholera blackened and choked to death 50,000 people in England. The event profoundly shocked the country and the Public Health Act of 1848 admitted the responsibility of bad housing in the plague. Introduced into Parliament in the same eventful year and passed in 1851 was the Shaftesbury Act, the first piece of housing legislation ever drawn up in England. The Act established public responsibility in the matter of housing and permitted towns of over 10,000 to buy land, and *to build and rent houses*. These bodies are completely comparable to the U. S. Housing Authorities of today. The State was in the housing business, and in it by popular request. Under the Shaftesbury Act, even before the War, the London County Council alone had built and was renting better than 10,000 homes.

On this foundation of State-in-Building the English have since raised three pillars, and on these pillars rests this decade's boom. The first pillar is Public Credit. The second pillar is Community Planning. The third pillar is Government Subsidy.

The Public Works Loan Act of 1875 established a Board which was empowered to make loans to local authorities at reduced rates of interest, the money to be used among other things for the purpose of building low rent housing. To secure these loans the cities gave mortgages on their tax receipts, getting in return Treasury funds at from 3½ to 4½ per cent. This rate was lower than that which the small city could secure on its credit in the open market. Large cities can do as well, today rarely avail themselves of Board money.

Community planning is a concept much higher in the housing scale, and a correspondingly longer time was required for its acceptance. In response to an unremitting clamor on the part of a great body of social planners toward the turn of the century there were passed laws providing for the inspection and repair of

*For the purposes of this article "home" equals a family dwelling unit of any sort, whether in a single or row house, or in an apartment building.

HOUSING PROGRESS IN ENGLAND AND WALES SINCE 1919

Year ended September 30	NUMBER OF HOUSES COMPLETED WITH STATE ASSISTANCE UNDER:				NUMBER OF HOUSES COMPLETED WITHOUT STATE ASSISTANCE*	TOTAL
	Addison Scheme 1919 Acts	Chamberlain Scheme 1923 Act	Wheatly Scheme 1924 Act	Slum Clearance Scheme 1930 Act		
1919						
1920	6,127					
1921	67,945				†30,000	210,237
1922	106,165					
1923	24,998	991			52,749	78,738
1924	5,525	30,934			73,032	109,491
1925	1,497	78,409	12,385		66,735	159,026
1926	975	84,431	46,489		65,689	197,584
1927	527	115,073	97,316		60,313	273,229
1928	30	47,969	53,792		64,624	166,415
1929	18	80,240	53,516		71,083	204,857
1930	14		51,310		110,375	161,699
1931			61,615	420	139,909	194,944
1932			62,530	5,146	132,886	200,562
1933			44,131	6,302	167,880	218,313
1934			37,214	15,046	261,168	313,428
1935				32,912	283,453	316,365

* Houses having a ratable value exceeding £78 (or £105 in the Metropolitan area) are excluded. † Estimated figures.

I. HOUSES PROVIDED UP TO FEBRUARY 29, 1936, UNDER:

Housing, Town Planning, etc., Act, 1919		
By Local Authorities	170,090	
By Private Enterprise	4,545	
		174,635
Housing (Additional Powers) Act, 1919		
By Private Enterprise	39,186	
		39,186
Housing, etc., Act, 1923		
By Local Authorities	75,309	
By Private Enterprise	362,738	
		438,047
Housing (Financial Provisions) Act, 1924		
By Local Authorities	504,518	
By Private Enterprise	15,780	
		520,298
Housing Act, 1930 (Slum Clearance)		
By Local Authorities	79,934	
By Private Enterprise	677	
		80,611
Housing Act, 1935	18	18
Housing Act, 1925, and Other Acts	31,179	31,179
Total		1,283,974

II. HOUSES PROVIDED BY PRIVATE ENTERPRISE WITHOUT STATE AID TO SEPT., 1935

with a ratable value:		
Up to £26 (£35 in Greater London)	1,261,411	
£27 to £52 (£36 to £70 in Greater London)	259,242	
£53 to £78 (£71 to £105 in Greater London)	30,994	1,551,647
Grand Total		2,835,621

slums, then for the demolition and reconstruction by local authorities of whole slum areas, and finally, in 1909, for the planning of urban areas by zoning. These measures were the legislative echoes of work being concurrently carried out by three giants of housing reform, Barry Parker, Sir Raymond Unwin and Ebenezer Howard, work which was to comprise the second of the three pillars of housing.

First there were two books: Howard's *Tomorrow,* which advanced the practical dream of building on vacant land a new town, full-grown from the planner's brow; and Unwin's *Nothing Gained By Overcrowding* which proved in pounds and pence that a builder made more money by building twelve houses to the acre than by building twenty (see col. 2). Then there were the two Architect-Planners, Unwin again and Parker, plus a planned town, Letchworth. Letchworth is still paying its limited dividends with regularity and grows every year. The three men and the two books and the town are important to building, as Lewis Mumford has so correctly observed, because they gave housing a new image. It was an image which impressed people with the tremendous defects in the old order. And it gave them a pattern for a new order, one not only for better houses, but for better groups of better houses—in short it gave them a Community Plan. Without this Plan it is certainly arguable that Britain's boom would long ago have collapsed from sheer dullness.

SUBSIDY

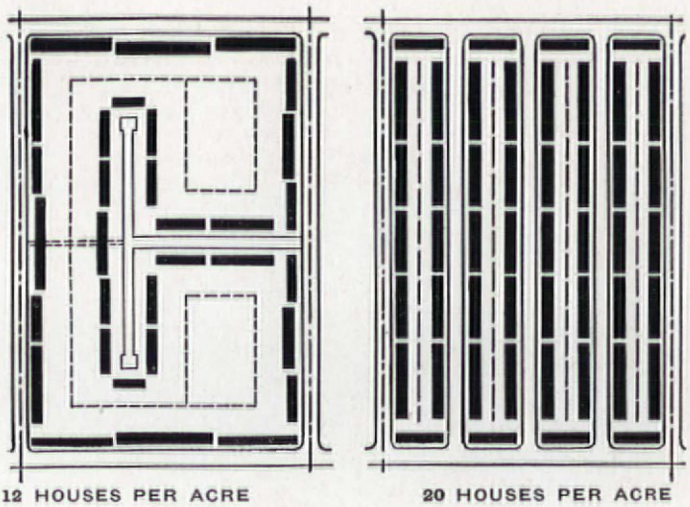
In 1911 there were 97.6 dwellings to every hundred families in England. But thanks to an almost complete stoppage of building during the War there were in 1921 only 91.9 dwellings to every hundred families. The price of building materials stood 175 per cent above pre-War levels, and speculative building of any sort had been effectively stifled by the restriction of rents at pre-War levels. Lloyd George saw in the first moment of the new Peace a chance both to revive the building industry and to reward his country's warriors. He campaigned and was elected on a platform whose main plank was "Homes for Heroes." But it was obvious that at this juncture something more than a slogan was needed to start the country building. To those twin pillars of British housing—Credit and Planning—there was therefore added, by the Housing and Town Planning Act of 1919, the third pillar—Subsidy.

The subsidy is the only considerable contribution made to housing by post-War England. Subsequent legislation served merely to vary the form which the subsidy would take and the persons to whom it would be given. Successive Conservative Governments withheld the subsidy from Local Authorities in order to encourage private builders, and the Liberal Governments gave it back in order to insure housing for the lower classes. Two points about the theory of the English subsidy must be held firmly in mind. In the first place it was a subsidy to encourage housing for the poor, but only spasmodically for the poorest; the British are great believers in the process of "filtering up." And it was given to private enterprise as well as to the municipal housing authorities.

The Housing Act of 1919 started with an admonition requiring Local Authorities to survey the housing needs of their working classes and to submit plans for their fulfillment to be approved by the Ministry of Health. Then it proposed two general forms of subsidy for housing.

To Local Authorities it guaranteed to meet all losses over specific amounts, the amounts to be determined by the size of the towns participating.

To private builders it gave a lump subsidy ranging from $650 to $1,161 per house. In exchange, both the Authority and the private builder had to conform to certain minima of accommodation, layout, specification, planning, and price.



12 HOUSES PER ACRE — 20 HOUSES PER ACRE

DEVELOPMENT OF 20 ACRES

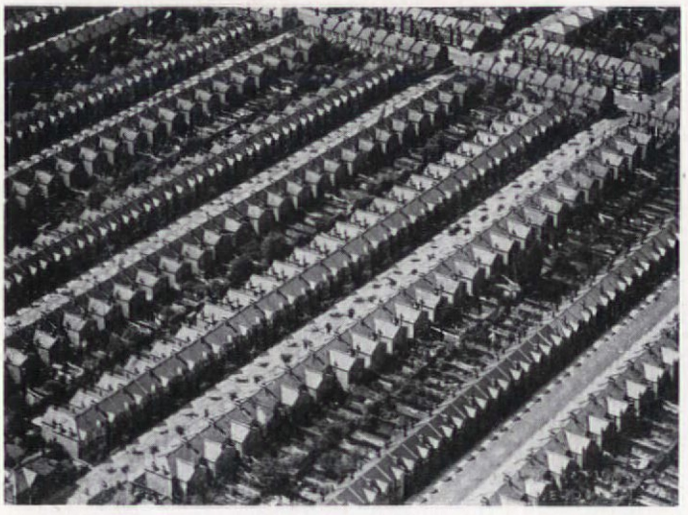
	12 Houses to Acre	20 Houses to Acre
AVERAGE FRONTAGE PER HOUSE	21 ft.	21 ft.
Cost of raw land per acre	$1,000	$1,000
Cost of 40 ft. roads per yd.	$51.25	$51.25
Cost of 30 ft. roads per yd.	$41.25	—
NUMBER OF HOUSES	240	400
Gross area	20 acres	20 acres
Area of roads	2.46 acres	4.76 acres
Net area	17.54 acres	15.24 acres
AVERAGE SIZE OF PLOT	353 sq. yds.	184 sq. yds.
Road frontage:		
40 ft. road	3,732 ft.	10,370 ft.
34 ft. road	2,162 ft.	—
AVERAGE ROAD FRONTAGE PER HOUSE	24.54 ft.	25.9 ft.
Total cost of land	$20,000	$20,000
Total cost of roads	$46,740	$88,575
Ave. cost of land per house	$83	$50
Ave. cost of roads per house	$195	$221
Ave. cost of roads and land per house	$278	$271
Cost per sq. yd. of plot	$.79	$1.47
GROUND RENT PER PLOT PER WEEK, AT 6%	$.32	$.31

(From *Modern Housing,* by Catherine Bauer)

The Housing Act of 1919 had overlooked a prime precept of the art of subsidy: Never limit the obligation of the recipient, always limit that of the donor. By the terms of its subsidy the Government had in effect handed the Local Authorities a blank check and the Local Authorities proceeded to display their irresponsibility by letting extravagant contracts. By the time the Government was able to repeal its bounty in 1921 Local Authorities had built 170,000 houses, and private builders 43,500, all for rent. In those two years, the Government had contracted a capital debt of two and a half billion dollars,* which it will cost more than 40 million dollars a year for 40 years to discharge. Distributed over the houses subsidized, this means a cost of $5 per house per week. Over one-half of the annual cost of retiring all English housing subsidies today is made up of the charges incurred under the Housing Act of 1919.

In 1923 a Conservative Government tried subsidy again, first taking the precaution to reverse the former method by limiting the Government contribution to a

For convenience £1 equals $5.



Nothing Gained by Overcrowding at Tooting, near London.



Aerofilms

Manchester's Local Authority Planned This Community.

definite amount, and leaving it to the Local Authorities to meet any excess. Under the Housing Act of 1923 (the "Chamberlain Scheme") it gave to Local Authorities a payment of $30 a year for twenty years for every dwelling erected. To private enterprise it extended a lump sum ranging from $375 to $500 for each house of approved plan and construction. This Act was designed specifically to help private enterprise and up to its repeal in 1929 it subsidized 362,000 privately built houses as against 75,000 built by Local Authorities. Note that these 362,000 privately built houses subsidized by this Act constitute four-fifths of all privately financed houses to receive a subsidy. And these 362,000 houses, alone of all subsidized houses, might be sold as well as rented. Cost to the Government: $12,500,000 annually for twenty years.

In 1924 a Labor Government upped the housing subsidy to Local Authorities under the Housing Act of 1924 from $30 for twenty years to $45 for 40 years. Until the termination of grants under this Act in December, 1932, there were erected with its subsidy 494,000 houses by Local Authorities, and 15,000 by private builders to whom the Authorities passed on a capitalized subsidy. Total cost to the Government: $20,000,000 for 40 years.

This was the last of the subsidy Acts to be passed, save for those to be aimed at slum clearance. The Housing (Financial Provisions) Act of 1933 canceled all subsidies then extant. From 1919 through 1933 they had been responsible for the erection of 1,276,000 houses—853,000 by Local Authorities, and 423,000 by private enterprise. The capital cost of these subsidies runs over 3.3 billion dollars. The Government has already paid out $690,000,000 and will continue to pay at the rate of about $80,000,000 for the next twenty years, when the cost will begin to decline somewhat. But the exorbitant Addison subsidies which account for half the total will not run out for 30 more years. To help you decide how extravagant these subsidies may be, here are two items culled from the current (1936) British Budget for comparison with the annual housing subsidy of $80,000,000; for Defense (Army, Navy, Air), $570,000,000; for Education, $265,000,000.

Good and bad, this string of subsidies has produced 860,000 houses constructed by Local Authorities and 423,000 by private enterprise since the War. Reserving the privately built houses for later examination, let us isolate the net of fifteen years worth of housing by the British State as exemplified in the Government-subsidized home built by municipal authorities.

THE SUBSIDIZED HOUSE

The most important attribute of this home built by the State is that it is much more often than not a cottage in the country, backed and fronted by a garden. A relatively small number of State-made homes have taken the expensive form of an apartment in town. Even the London County Council, a Local Authority which might be expected to build a relatively large number of its dwellings in town, has placed only one out of every seven of its subsidized family units in apartments. The rest are found in suburban cottages.

For reasons which Thorstein Veblen has characterized as those of "honorific waste," the U. S. citizen finds it almost imperative that his house be free-standing. More realistic, the English customarily builds his cottages in rows of from four to eight. While this may possibly induce a certain monotony of treatment, it has the advantage of great economy. Row houses save by dispensing with extra walls, extra land, extra utilities, extra roads. The windows that are lost used to stare at the adjacent brick wall or, worse yet, at the adjacent family life. The savings thus effected are put into the purchase price and into extra space. The English house today has higher spatial standards than any comparable housing on the Continent.

From the structural minima imposed by the State on Local Authorities, there has grown up in England a standard type of house plan, to which conform the vast majority of all State-assisted houses. Consisting of a living room, combination kitchen-laundry, three bedrooms, bath and rarely a parlor, its superficial area has been steadily retreating from 764 sq. ft. in 1930 to 723 sq. ft. in 1935. These rooms are typically arranged on two floors, in one half of a two-family house, or in a row house series. There is a walled-in space for coal and another (in lieu of an ice-box) for the larder. There is no basement and the heating is usually supplied by open fireplaces, or hot air from the kitchen stove. There is no attic space. The kitchens are small and contain usually no more than a gas stove, a sink and cupboards.* Houses are usually brick, with wood-covered cement floors.

These houses, when constructed as units in a row, cost to build between $1,250 and $1,500 each. The figure is

*The urban apartment is smaller, usually comprising a living room, toilet, bedroom, and kitchen-bath with a superficial area of 550 sq. ft.

only superficially amazing. Actually a similar house could be built in the U. S. for nearly the same price. Add $300 for a basement, $400 for central heating, $200 for a bath, $300 for a full kitchen, and $1,000 for added labor at higher rates and you have raised the cost of the $1,500 house to $3,700. The average cost per superficial foot is a little over $2.

THE LOCAL AUTHORITY

Between the Government subsidy and the completely subsidized house stands the Local Authority, the implement of State. The Local Authority for every town is the municipal government, that body which received most of its housing powers in the middle of the Nineteenth Century. But let those who try to place the English pattern on the American scene take care: the typical English municipal government is comparable to very few local governments in the U. S. To an Englishman, municipal socialism is an accomplished fact long since shrugged off; almost every town in England owns and operates its street railways, its electric power, its gas and water plants. In this tradition, the English municipality has found it natural to regard housing as a species of public utility. It therefore has bought and now owns land and houses in large numbers, never hesitating to build, improve land, or show a profit. For instance, the city of Manchester owns and rents 22,000 houses. London has 55,000, Liverpool 35,000. All municipalities together own and operate the 800,000 they have built. Although Local Authorities do most of their building through contractors, they maintain a check on values by building an occasional house by themselves.

To finance construction of its housing, a large Local Authority will generally borrow from the banks on its mortgages, and a small one will apply to the Public Works Loan Board where it can get better rates than its own obligations will fetch on the market. This Board is today offering money at 3½ per cent, a feat which neatly illustrates a phase of latter-day European banking not yet generally understood in this country. As widely accepted on Threadneedle Street as it is in Paris or Berlin today is the thesis that the normal rates on money will henceforth be low rates. To get them for England, the British Government has stepped boldly into the credit market, and in 1933 forced rates down to their current lows. Latterly, as a consequence of the new rates, there has been some complaint on the part of Local Authorities because the Board has made no attempt to equalize the old high rates against the new lower one. Thus the indebtedness of Local Authorities to the Board in March, 1935, included £43 million at 6½ per cent, £25 million at 6 per cent, £6 million at 5½ per cent, £2.3 million at 4¼ per cent, £60 million at 5 per cent. It is now proposed to equalize these diverging rates by the pooling of obligations at a median rate of interest.

The Local Authority rentals run from about $2.50 up to $5 a week per family unit, with benefit of subsidy. Latterly, and under optimum conditions, it has been possible to erect a dwelling of fairly good quality to rent for nine shillings a week, without subsidy, or about seven shillings ($1.75) with subsidy. Without going too deeply into the extremely intricate matter of relative standards of living in the U. S. as compared with England, it is safe to say this: a rental of seven shillings will reach the unskilled day laborer and constitutes the English ideal of "low rent housing."

The subsidy has caused a great deal of trouble to the English. The payments, it will be remembered, are usually in the form of annual installments, rather than in one lump sum. To date the most widely used method numerically has been to credit the subsidy directly to the landlord, who will then spread its benefits equally over all the houses. However, it has been well established that this system, while relatively easy to operate, is open to many abuses.

In the first place, this system fails to take into account the fact that one tenant may need more relief than another, and that the former will suffer at the expense of the latter when both receive equal subsidies. Then there is the further fact that this type of subsidy reduced control to a minimum, and it has been the experience of English housers that many a tenant who could actually afford to pay his full economic rent has been able to avail himself of a subsidy simply for lack of competent inspection. However, the so-called "differential rent" policy developed at Leeds side-steps much of this abuse. Under this method the subsidy, instead of being paid to the landlord, is administered directly to the tenant, each one getting what he really needs to make his total contribution add up to the landlord's economic rent.

THE AUTHORITY IN ACTION

Now look at the London County Council. This is the executive arm of the municipality, the body which became the Local Authority for London's housing program, and is today the biggest of its kind. It owns and operates more than 68,000 dwellings in and around London, 58,000 of which it has built since the War. It has a tenant role of 305,000. Their accommodations divide themselves roughly into 50,000 houses in suburban row developments, and 8,000 apartments in urban multi-family units. The row developments are two- and three-story brick buildings located in the suburbs, and limited in accommodations to twelve families to the acre. The apartments are confined to the more expensive urban land, where the units are built five and six stories high. Division as to rents and accommodations are as follows:

No. of Rooms	2	3	4	5
No. Cottage Estates	1,727	16,755	24,073	7,110
Lowest Inclusive Rent	7s. 5d.	10s. 1d.	11s. 6d.	15s. 1d.
Highest Inclusive Rent	15s. 1d.	20s. 6d.	22s. 5d.	27s. 11d.
No. Apartment Houses	1,718	4,985	1,619	458
Lowest Inclusive Rent	4s. 0d.	6s. 2d.	7s. 10d.	12s. 9d.
Highest Inclusive Rent	15s. 1d.	20s. 6d.	22s. 2d.	24s. 4d.

Typical of the suburban row house developments is that undertaken by the London County Council at Becontree, an area of 2,784 acres situated about ten miles from Central London. Its land usage breakdown is this:

	Acres
Dwelling houses (including roads and greens)	1,665
Open spaces, school playing fields, etc.	507
Schools	135
Churches	40
Shops, licensed premises, cinemas and clubs	62
Allotments	38
Existing property retained	24
Industrial purposes	313

This development already contains 25,000 dwellings (or half of all the Council's suburban properties), and a population of 115,000. The circular layout is ringed with several wide roads, while others converge toward the center. These main arteries are supplemented by care-



Ewing Galloway

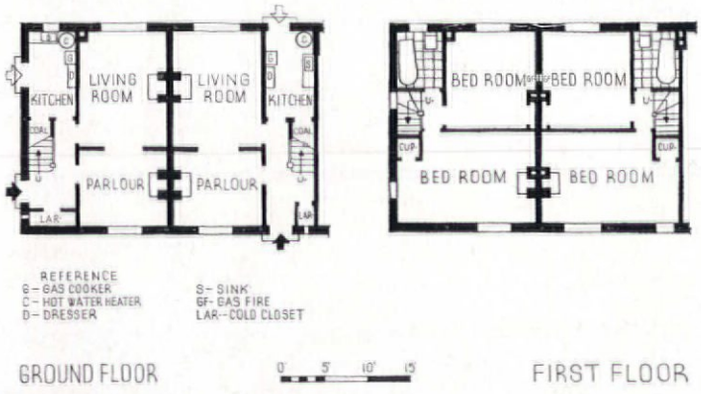
LOCAL AUTHORITIES built these parlor type houses in Birmingham, this pair of four-room cottages near London, and these urban apartments in Liverpool.

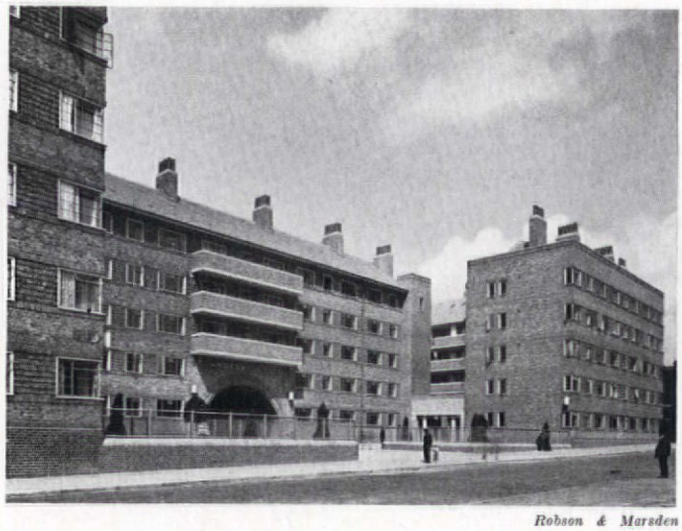
fully laid out connecting roads, which vary in width from 100 to 60 ft. Total road mileage: about 66.

The open spaces include one park of 118 acres. The development of the estate was carried out by one master contractor. There are 27 churches, 30 schools, 400 shops, 14 doctor's houses, 3 clinics, 2 cinemas, 5 saloons, 2 clubs, 2 libraries, a swimming pool. All dwellings have gas; electricity is optional. Each has a scullery, a bath, and its gardens, front and back. Total capital cost, including land, sewers, improvements, houses is $70,000,000. The gross annual rental for 1934-35 was $4,800,000. And this is only one fraction of the LCC's holdings.

The total capital expenditure for housing of the London County Council itself has amounted to $190,000,000. The total expenditure in 1934-35 for housing amounted to $23,000,000. The total income was $17,000,000. The net deficit was therefore $6,000,000. This deficiency was due to financing houses under the housing Acts in these amounts: $3,000,000 under that of 1919, $700,000 under that of 1923, $1,800,000 under that of 1924, $450,000 under that of 1930. To meet it, the Government contributed $4,000,000. Adjoining authorities paid $38,000 for the use of LCC land. Charged to county tax account therefore was $1,970,000. This is equivalent to a tax of 2.4 pence on the pound outside the city, and 1.66 within.

These homes built by the London County Council are typical in type and price of all the 860,000 houses built by the 1,500 Local Authorities since the War, with the aid of a subsidy. The additional 425,000 houses which were built by private enterprise with the aid of a subsidy are more nearly a function of the private building industry, and so will be dealt with later. Here you need only know that a Local Authority house is almost invariably better built than a comparable one erected by private enterprise. But the 1,500 Local Authorities were not always to be building these moderately low rental houses.





Robson & Marsden



Aerofilms



Robinson & Co.

PRIVATE ENTERPRISE built this planned community at Sidcup, as well as the four homes which, reading from this page to the next, sell for $4,775, $4,000, $5,200, and $3,200. All are in two-family houses save the one priced at $5,200.

Subsidized houses built by Local Authorities rent at from ten to twenty shillings a week. This rate of course was in direct competition with that of private enterprise, which was itself successfully marketing houses to sell for as little as ten shillings. So long as the tremendous post-War demand for housing continued, the complaints against this invasion of private enterprise were uttered without too much emphasis; the subsidies had also been extended to 423,000 houses built for private profit. But by 1932 the virulence of the shortage in housing was somewhat diminished and the voice of the Conservative Party was heard: Government activities in building must be restrained to non-competitive fields. The boom was easing, the subsidy debt was mounting, and so the country agreed. Result was the Housing Act of 1933, which first withdrew all subsidies from private builders, then confined the State's housing activities to the field of slum clearance. Total number of family units rehoused to date in the slum clearance program: 50,000.

Thus, in bold, the history of the subsidy in British housing. In 1919 it was a device to start building activity; in 1923 it became a booster for private enterprise; and in 1933 it resolved itself into a carefully restrained, non-competitive means of social betterment. And, at the same time in 1933 that the subsidy was removed from the competitive range, private building began its first and astounding uprush, and the hero of the saga of British building turned overnight from Subsidy to Private Builder.

PRIVATE BUILDING

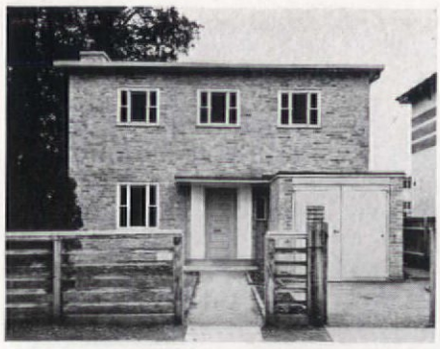
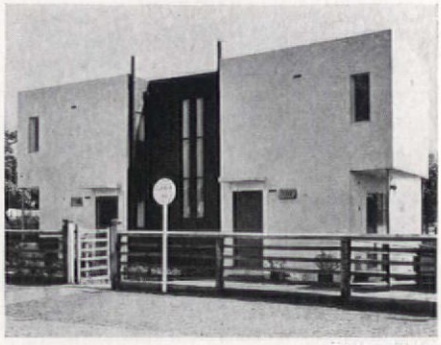
In 1930 110,000 houses were erected by private enterprise without any State aid. By 1933 this total had risen by fairly even intervals to 167,000 houses. In that year the State was firmly removed from the competitive field, so that 1934 showed an astounding jump in privately financed homes, up to 261,000. In 1935, for the year ending September 30, the total rose further to 283,000.

To orient these building figures historically, compare them with the building record of 500,000 houses erected by private enterprise in the decade before the War. The average is 50,000 pre-War houses a year as against better than 280,000 in 1935. The precise causes behind this remarkable rise will be considered in the September issue of The Forum, but let us here note a few of the circumstances attendant upon the boom's development in private industry.

The World War meant an almost complete cessation of residential building, and it meant a rigid set of rent restrictions. The result on the one hand was to create a tremendous demand for houses and on the other to keep the financial return on building below the level of profit. To bridge the gap between the permissible rent and the economic rent, the subsidy of the 1919 Housing Act was introduced. This was the measure which took the extraordinary step of paying flat sums up to $1,160 to the private builder for each house built. Naturally enough, this served to break the economic jam created by rent restrictions; private enterprise built about 40,000 houses under this gift before its repeal in 1921. On the other hand high costs held its unassisted output down to almost nothing.

In the Nineteen Twenties, private building's history has three milestones. In 1923 Minister of Health Neville Chamberlain, speaking for the Conservative Government just then in power, extended to private builders the $350-to-$500 subsidy of the Housing Act of 1923, which was to be responsible for seven-eighths of all subsidy building by private enterprise. In a seven-year spree, private builders erected more than 350,000 subsidized houses. The unassisted market for private builders was thereby sufficiently eased to allow it to return to its pre-War level of 50,000 houses a year. Second milestone was a decline in labor and material prices in 1928. Having notched slowly up from 50,000 houses a year in 1923 to 70,000 in 1929, private, unassisted building rose suddenly in the following year to 110,000, then to 132,000, where it hovered for another year before shooting up to the unprecedented total of 167,000 houses in 1933. In that year all subsidy was removed, private building entered its third stage, and The Boom was on.

The vast bulk of the lower middle classes of England

Newbery Photos

were born and bred in flats not more than fifteen feet wide, consisting of three rooms placed in a row, so that the middle room had no windows, burned gas all day. Such was the standard of depressing regiments of housing erected during the Nineteenth Century in London, Liverpool, Manchester, Leeds, and other large cities. The people one economic notch higher—Queen Victoria's "dear lower classes"—lived in accommodations whose only essential difference was that they were infinitesimally larger. There was obviously required very little incentive to move them from hearth and home.

That incentive appeared in the late Nineteen Twenties, and the early Thirties. It was multiple in nature, and consisted broadly of the following factors: 1. Increased purchasing power among the lower economic groups, 2. Diminution of interest rates and building costs, 3. Shifts in population due to a post-War realignment of the British internal economy, 4. The decrease of the size of the family unit from three almost to two, a phenomenon which caused a higher housing demand from the same number of people. A more serious evaluation of these factors will appear in the September issue of THE FORUM. For the present it is enough to know that these four factors caused a sharp demand for new housing and at the same time a widespread ability to afford it.

THE COST

SINCE the War the price range of the privately built, privately financed house has followed much the same curve as that of the Government-subsidized house, both being conditioned by approximately the same factors. Immediately after the War, it was hard to find one for less than $5,000. The Wheatly subsidy of the Housing Act of 1923, which ran as high as $1,160, brought the price down smartly, as did the consequent acceleration of production. Increased efficiency, lower money rates, and long-term mortgages after 1930 brought it down still further. Between 1919 and March 31, 1936 private enterprise, without any subsidy assistance, built 1,697,443 houses. These were classified as to their "ratable value" by the Ministry of Health, and thus reveal that within that time 1,388,509 of them were priced at less than $5,000. In September, 1934, the Ministry instituted a more detailed breakdown of the value of privately built and financed houses. This reveals that currently about 40 per cent of the under-$5,000 houses sell for less than $2,500. While it is impossible to determine exactly where the best selling price falls today, a good guess would place it near or slightly above the $2,500 price itself. This price is the sale price of the house, and does not include the land.

In the same analysis dating from 1934 the Ministry of Health also determined that between September, 1934 and March, 1936:

Of the 154,000 houses selling for less than $2,500, nearly 53,000, or about 30 per cent of the total, were for rent.

Of the 214,700 houses selling for between $2,500 and $5,000, about 37,000, or 17 per cent, were for rent.

From this it is apparent that the privately financed builders do by far their greatest business with houses for sale rather than for rent. For the purchaser, however, the difference has by now become almost academic, for it is the custom in England to pay for a house by the week. And financing charges have latterly dropped so low that it has in fact become almost as cheap to buy as to rent—even after writing off the hidden charges of depreciation, upkeep and commutation. By an underwriting arrangement which the builder nowadays customarily makes with the mortgage company, the standard financial arrangement is a 10 per cent down payment, a 20-year mortgage, and weekly retirement of the debt. These weekly payments run from a bottom of $2.50 for a four-room house up to an average of about $5. These figures would, in a typical instance, embrace all charges, including taxes but not commutation. Within the last six months, this situation has shown some small change. On the one hand, a group of the more speculative builders are doing business with a down payment on their houses dropped to 5 per cent: and on the other, many of the older, more conservative firms have begun to raise their prices and their equity requirements. The market is hardening perceptibly.

A CASE HISTORY

THE house which $2,500 will buy is pictured on the frontispiece. This house is the prototype of the Boom, and is only slightly better or slightly worse than the other 1,388,000 unsubsidized houses which private enterprise built to sell below the $5,000 mark. Look at it and you look at the English standard of new housing in the second and third decades of the twentieth century.

This particular house was erected by a builder-contractor in Surbiton, a flat and dull suburb of London, located in Surrey. It was designed, along with the rest of its development, by an architect who says: "I have taken considerable trouble to eliminate all the undesirable features generally associated with houses of moderate price, such as danger of fire, freezing of pipes, damp walls." It is one-half of a two-family house and it has a garden both in front and in back. It has three bedrooms, kitchen, living room, dining room, and a bath. Their dimensions are:

Living room	11 ft. 6	in.	x 10 ft. 6	in.
Dining room	11 ft. 8½	in.	x 10 ft.	
First bedroom	13 ft. 2	in.	x 10 ft.	
Second bedroom	11 ft. 9½	in.	x 10 ft.	
Third bedroom	10 ft. 2	in.	x 6 ft.	

This house has no basement, and no central heating. But to insulate it, it has felt under the roof tiles, while

the pipes and water tanks are made of copper and kept as far from an exterior wall as possible. Heating consists of coal grates in the two downstairs living rooms, and gas burners in two of the three bedrooms. During the raw, foggy days of an English winter, the American would shiver for his steam heat in spite of these two grates, two burners, and the kitchen stove; but the Englishman is either inured or uncomplaining.

The kitchen, according to almost any U. S. standard, is primitive. It has no refrigeration, only one sink, no built-in cupboards. It does have a coal-burning heater (mostly for hot water), a deep sink, a draining board, and chromium plate on the spigots. The builder provided only the space for the two-ring gas stove which appears in the picture; the owner bought it. The floor is covered with linoleum. Set in one wall is the larder, which is nothing more complex than a ventilated cavity in the brick wall where the food is kept. This one is equipped with a special dust and fly-proof ventilator.

The bathroom upstairs derives its hot water from the coal burning stove in the kitchen. It has no shower, but it has a substantial bathtub with "built-in" lines. The floor is tiled. By looking at the exterior picture, you can see that the bathroom drains run down the outside of the house.

The construction of this house is largely brick, with wood covered cement floors. Steel girders run from wall to wall under the front and back bedrooms. The electric wiring leaves much to be desired in style, and does not stretch to floor outlets or wall switches.

Finally, the front and back gardens of this house were "made up"; i.e., planted, before the tenant moved in.

The purchase price on this house was $2,550. To get it the owner had to make a down payment of $255 and assume a 21-year single mortgage for the balance. The land he holds only on a 99-year lease, for which he pays $31 a year. His total annual payments run:

Mortgage	$170
Land Rent	31
Taxes	52
Total	$253

His weekly payments on the house therefore amount to $4.86. If the owner of this house works in London, as he probably does, he will have to buy a commutation ticket to Waterloo Station which will cost him $75 a year, or $1.44 a week.

There is no absolute standard for a house. Nobody reading this page would like to live in the Surbiton half-house illustrated in the frontispiece. But on the other hand there are undoubtedly in this country a great many people now paying more than $25 a month for living quarters inferior to these. In England the housing standards of the lower classes were previously so intolerably low that the Surbiton house becomes by comparison practically irresistible. Almost all the privately built and financed houses are cut from the same pattern as this one: the minimum consists of two bedrooms, two living rooms; the maximum may hold an extra bedroom. The price relative to our standards is low for the same reasons that the price of the subsidized house is low: extra accommodations and equipment are eliminated.

THE BUILDER

Before the War the job of building homes for the masses used to be handled by firms like Holland & Hannen And Cubitts, Ltd., who are old-fashioned enough to remain very touchy about the presence of both the ampersand and the "and" in their title. Their regiments of flats in suburban London were cut to a pattern of terrible monotony, but they were solidly built. Today these old and respectable firms are still very much in the business, and Holland & Hannen And Cubitts, Ltd. has recently completed over 7,000 for the London County Council, all of which will probably stand for 100 years. But there has arisen with the Thirties another type of builder, the Man Who Came With The Boom. He has organized huge companies and effected numberless small but legitimate economies in construction.

With his large scale of operations he has kept his labor from turning over and been rewarded with gangs of workers who can put up houses with their eyes figuratively shut. He has taken to prefabricating doors, window frames, and staircases. He has bought materials in bulk. But he has also cheapened the house, shrunk its size, shaved its walls. He has taken to 8 ft. ceilings, execrable touches of "modern," wavy glass in the windows. He has not been above putting more faucets in his bathrooms than he has pipes—"for the effect." That most of the savings thus effected have been passed straight on to the buyer in the heat of competition is of no account. The buyer will soon be obliged in many cases to pay the extra savings out in higher upkeep. The Man Who Came With The Boom does not of course build all the new houses, nor does every man who came with the Boom build such shoddy ones. But the competition for the fabulous market has led the whole trade into a scrambling headlong race, and the slickest have set the pace. A gallery of builders appears on page 36.

Take a train 30 minutes out of London and find a new subdivision—"Estates" they call them. Close your eyes and listen to the salesman talk. Without his keen Cockney whine it is any free-ride, lot-raffling, high-spieling prairie State boom-booster talking. You have already seen what the salesman will show you in the way of a house, and you know the price. But you won't sign up, you won't be allowed to sign up before he shows you the true and greatest virtue of the English building boom. The English subdivision nowadays is almost always a Planned Community. It is one because it has behind it the legitimate heritage of Unwin and Parker, because the Local Authorities have already given Planned Communities to the poor, and because *Nothing Gained By Overcrowding* has been proof even to the obdurate that Planning Pays. This planning may be Unwin bowdlerized, but nevertheless it is planning. A great majority of the subdivisions, even in the lowest price class, display elegant cul-de-sacs, a classic staggering of building lines. The sickening, rows of pre-War housing have given place to decently spaced sets of row houses, each house with its garden, front and back.

Meanwhile the salesman has finished his talk, has offered his pen, has watched you sign, and has departed. A growing—though still relatively insignificant—number of Englishmen have signed up with his like for higher weekly payments than they could afford. They have had to move so far from town to get the benefit of cheap land that they have lost sight of their friends, feel ill-at-ease in the country, and are quite likely to move out from under the mortgage, lock, stock, and barrel. And presently the upkeep will have mounted much higher than anybody suspected, so that some buyers will be caught in default whether they like it or not. A few of the largest companies have already recognized this hand on the horizon and are building better, more expensive houses in self-protection. And meanwhile the sales curve continues to mount. More houses were sold in the six months since March 31 than were sold in the preceding six months. And one thousand Englishmen have bought new houses since this morning.

TWO NEWSPAPER PLANTS JAMES YARDLEY RIPPIN, ARCHITECT



Photos, John Gass

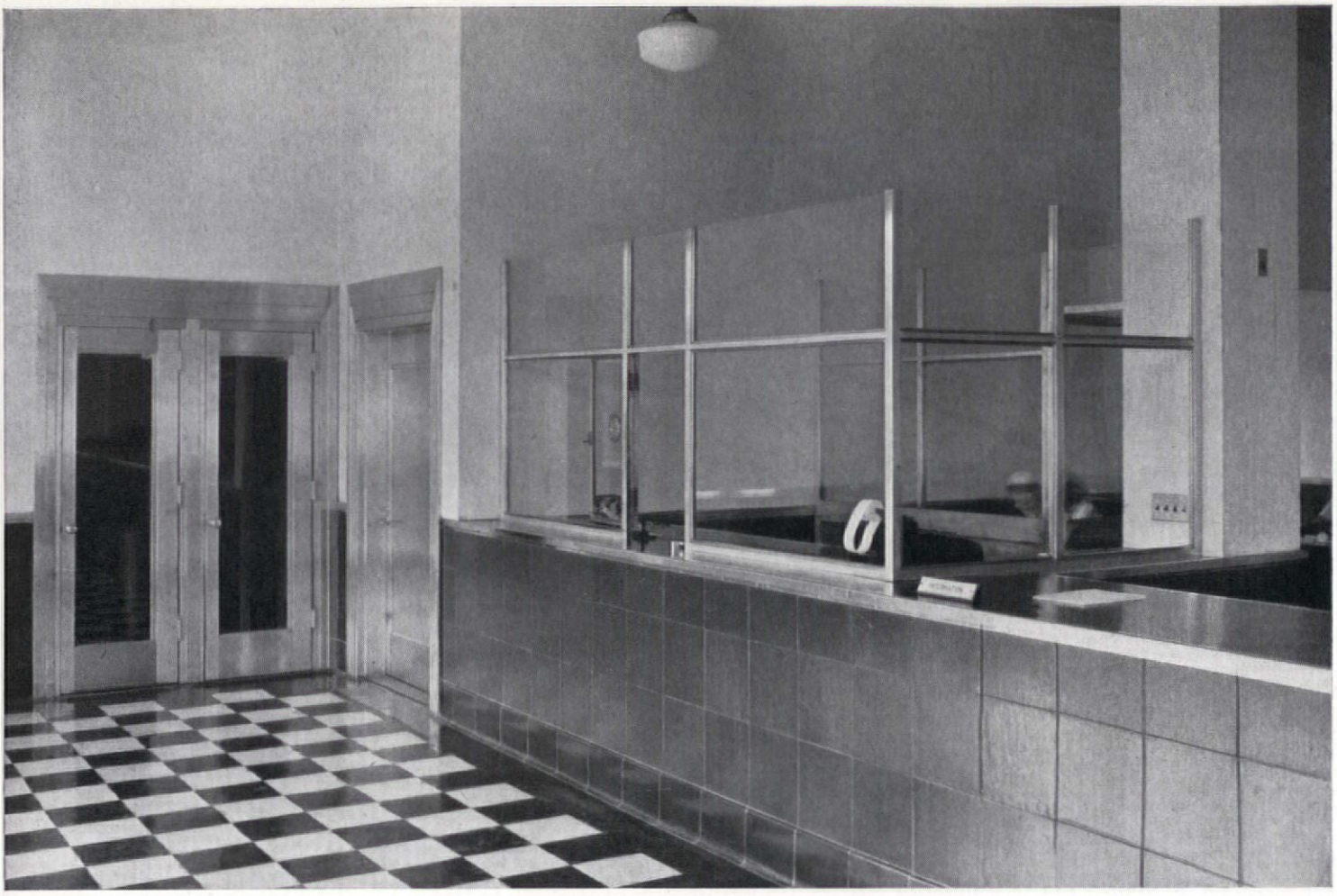
THE HERALD STATESMAN, YONKERS, N. Y.



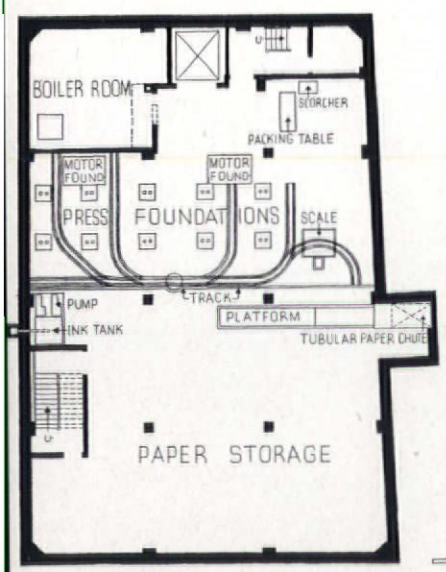
ENTRANCE

Although the advertising value of an arresting and appropriately designed building has been demonstrated time and again, the newspaper field, where one might expect to find an appreciation of this fact, has rarely been, with a few notable exceptions, distinguished for its buildings. The two newspaper plants illustrated on these pages are part of a chain in Westchester which publishes papers of comparatively small circulation. The "Herald Statesman" building, in addition to its own offices, houses the central offices of the company on its top floor. Distinguished in appearance, it is pointedly expressive of its contents—half office space and half printing plant. Tile gives the exterior a frankly veneered appearance, and for all its vigorous modernity the building exhibits few of the obviously "modern" mannerisms. The interiors are plain but entirely adequate, with a repetition of the tile used on the

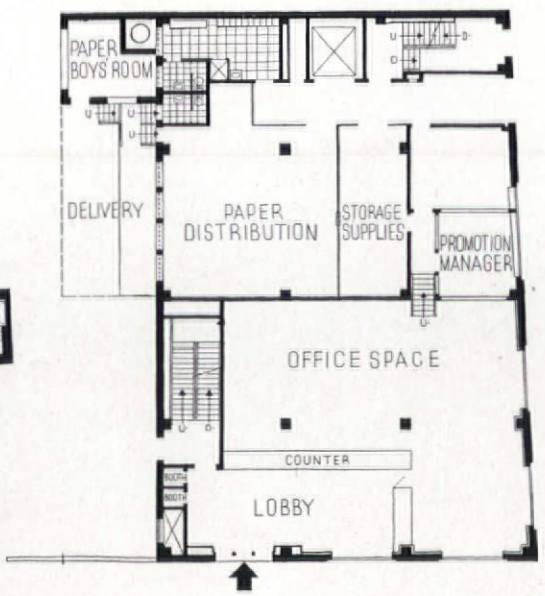




LOBBY

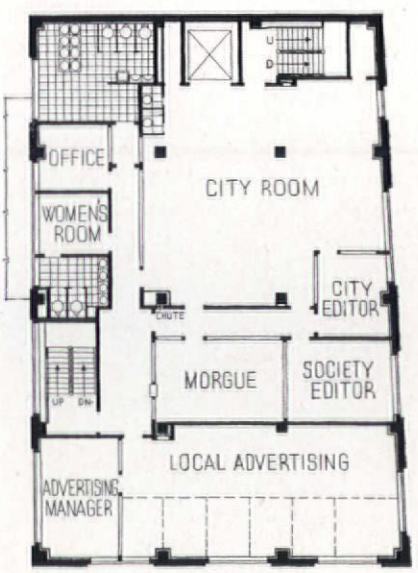


BASEMENT



FIRST FLOOR





SECOND FLOOR

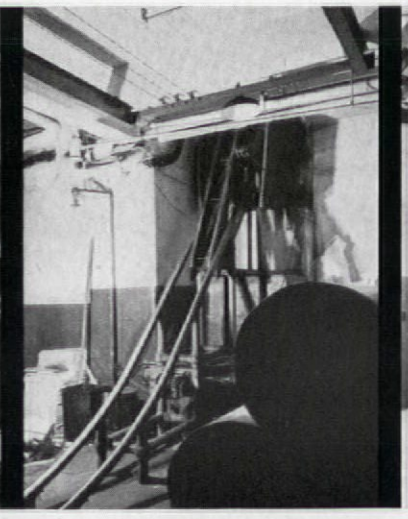


GENERAL OFFICE

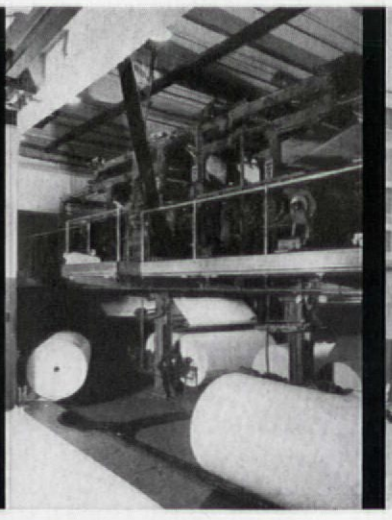
exterior. In spite of its height, the building has no passenger elevator, a complete pneumatic tube and conveyor system being used for sending copy, etc., to the required rooms. The plan is well organized for production purposes, with a receiving platform on one side of the building and delivery on the other. The large rolls of newsprint are handled mechanically from their arrival at the street level to the presses in the basement, and newspapers are conveyed in a similar manner to the delivery level above. The illustrations below show several phases of the production process.



EDITORIAL OFFICE



PAPER CONVEYOR



PRESS ROOM



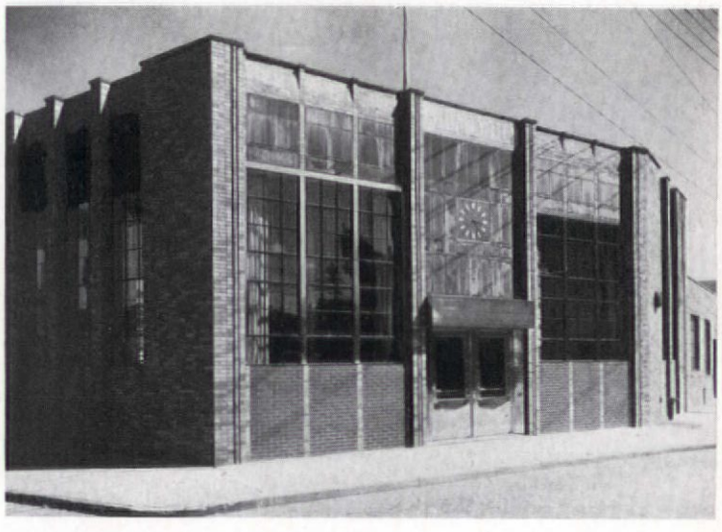
DELIVERY



Photos, John Gass

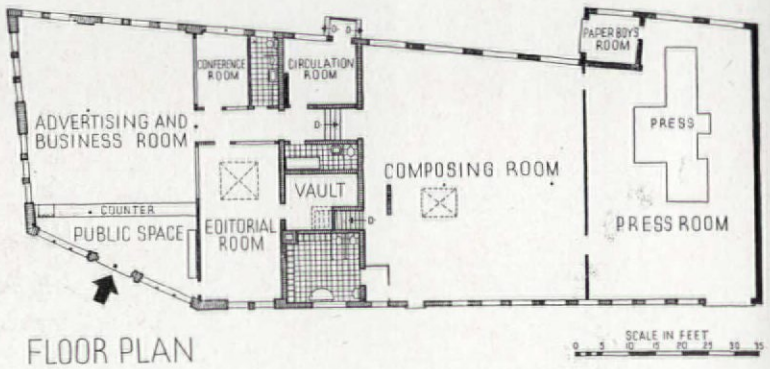
ENTRANCE

curious blend of factory and office building character, e "Daily Item" building, while less imposing than the Herald Statesman," is quite as successful in its treat-nt. There is a similar accentuation of the vertical re, accomplished with projecting piers instead of color anges on a flat wall. The public space is of unusual ght, and the monumental quality of the interior is as expected as it is impressive. Tiles are used as on the ceding building, with the same emphasis on their non-uctural quality.



THE DAILY ITEM, PORT CHESTER, N. Y.





FLOOR PLAN

CONSTRUCTION OUTLINES

	THE HERALD STATESMAN	THE DAILY ITEM
FOUNDATION	Continuous concrete walls, concrete floors.	Continuous concrete walls, concrete floors (six inch cinder fill).
WATERPROOFING	Basement walls and floor slab treated with membrane waterproofing.	All concrete foundation walls, steps to basement, treated with one coat of integral waterproofing.
STRUCTURE	Cold glazed cement tile exterior finish with common brick backing. Black glass window spandrels. Floor construction—concrete. Interior Partitions—Hollow tile and glass. Suspended ceilings plastered.	Pressed face brick and cold glazed cement tile panel exterior walls. Vitrified tile parapet coping. Floor Construction—concrete with rubber tile finish floor. Interior Partitions—common brick plastered.
ROOF	Steel Frame, concrete slab, Carey Asphalt.	Frame, covered with Barrett asphalt roof.
SHEET METAL	Flashing and Scuppers—sixteen ounce copper.	Copper flashing.
WINDOWS	Austral steel sash, glazed with Pittsburgh double strength "A" quality sheet glass.	Fenestra pivot sash, glazed with quarter inch thick Pittsburgh plate glass.
FLOORS	Lobby—terrazzo, Offices—quarry tile and rubber tile, furnished by the Quabaug Rubber Co. Composing Room—wood block by Johnson-Wright. Linoleum—Armstrong.	Offices—quarter inch thick rubber tile. Linotype Room, Press Room—wood block. Composing Room and Men's Toilet—concrete. Women's Toilet—rubber tile laid on wood sub-flooring.
MILLWORK	Exterior and interior doors—Hollow metal.	Steel shelving and cabinets, Doors—interior, stainless steel; exterior, Kalamein.
HARDWARE	Bronze.	Bronze P. and F. Corbin.
PAINT	Enamel—Barreled Sunlight. Flat work—"Lyt All."	Hockaday.
ELECTRICAL WORK	Wiring system all in rigid conduit. Switches—Bryant. Fixtures—Goodrich, direct and indirect.	Wiring system all in rigid conduit. Switches—Bryant Tumbler. Fixtures—Graybar, direct and indirect.
PLUMBING	Toilet Fixtures—Crane. Shower Stall—Litterer Bros. Pipes—soil and vent, cast iron.	Pipes—soil and waste, extra heavy cast iron. Water, brass.
HEATING AND VENTILATING	Vacuum heating system. Burnham Boiler, Johnson oil burner, American Blower Co. ventilating system. Excelso hot water heater.	Vapor heating system, May oil burner, Thermostatic return valves to all radiators. Hoffman automatic gas water heater.
SPECIAL EQUIPMENT	S. F. Bowser and Co. Inc. 290 pound News ink system for eight ink fountains. Chicago Pump Co. ejector in basement.	

THE PAPER MILL PLAYHOUSE

SHORT HILLS, NEW JERSEY



Photos, R. W. Tebbs

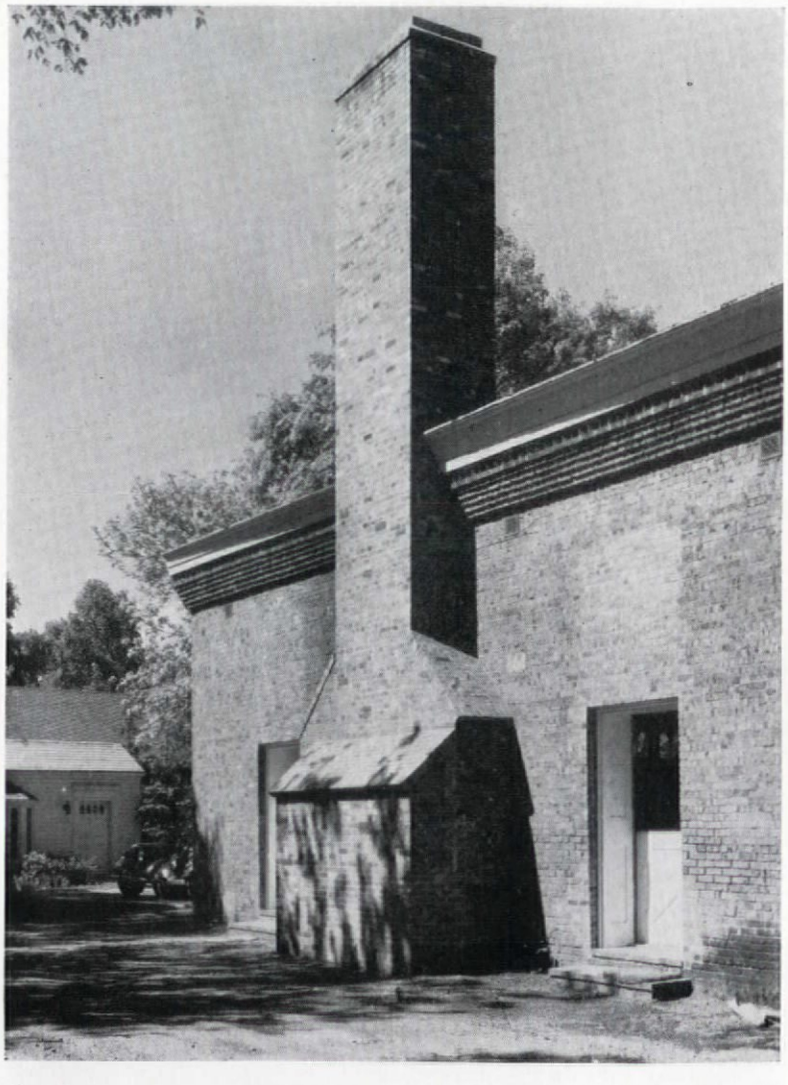
HENRY D. SCUDDER JR., ARCHITECT

Within the past few years, little and repertory theater groups have emerged from cobble-stone alleys and back streets. Grossing frequent box office highs of $6,000 weekly, they have become an important factor in the revival of the drama in America. Add to the play schedule, exhibitions, concerts, recitals and other community projects, and the result becomes an organization requiring the facilities of a complex structure. To provide for these varied functions, the abandoned paper mill which the theater occupies had to undergo considerable alteration. Since the 1860 main brick building had a certain honest native quality of style, little was changed or added on the exterior except the stage house, white window trim, and the Colonial entrance.

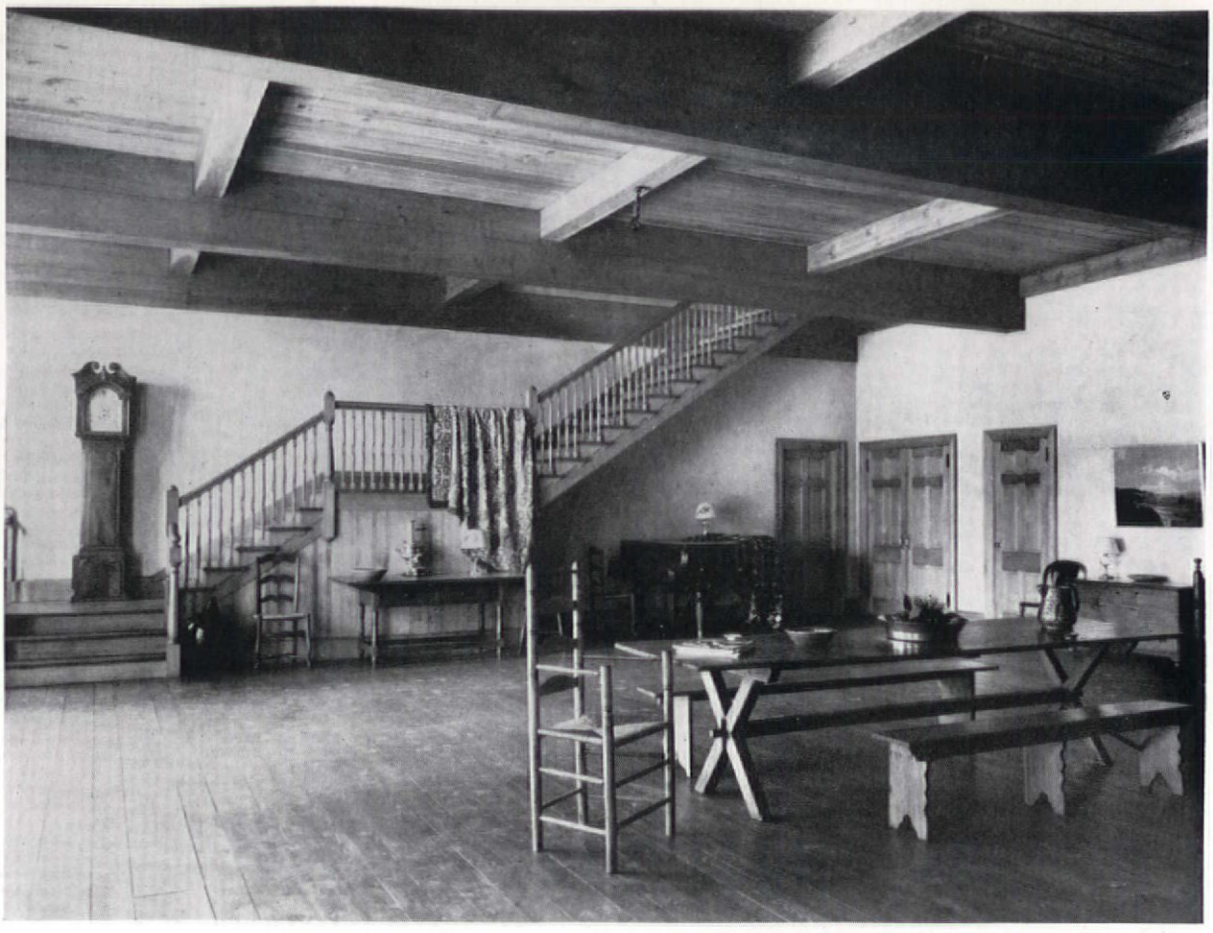


FOYER

EAST ELEVATION



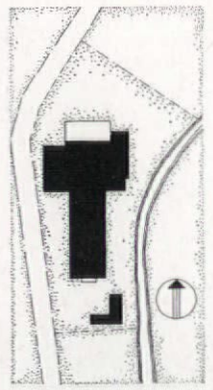
After most of the fourteen existing structures were removed from the irregular site, the next important problem lay in the development of a new auditorium from the old building and in the addition of a stage house. A large lobby provides space for teas, exhibitions, and play intermissions. The auditorium fills the remainder of the building. Affording an unusual amount of comfort, the 640 seats were deliberately spaced far apart. Lobby and auditorium walls are finished in natural pine. Professional, technical, and administrative quarters form a large part of the stage house. Offices, dressing rooms, exhibition rooms, storage space, and rehearsal halls are provided.



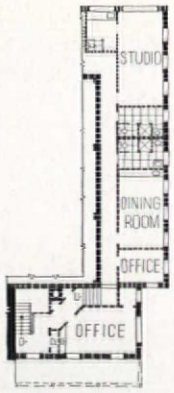
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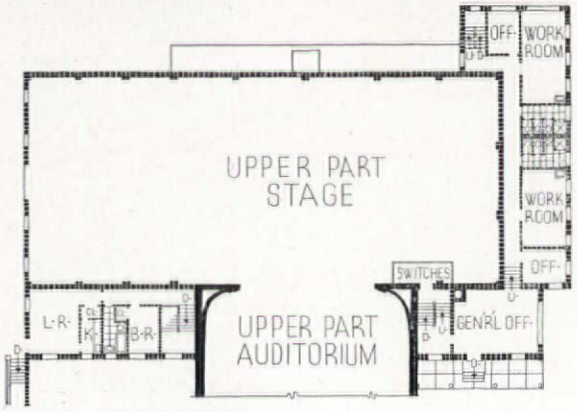
ENTRANCE



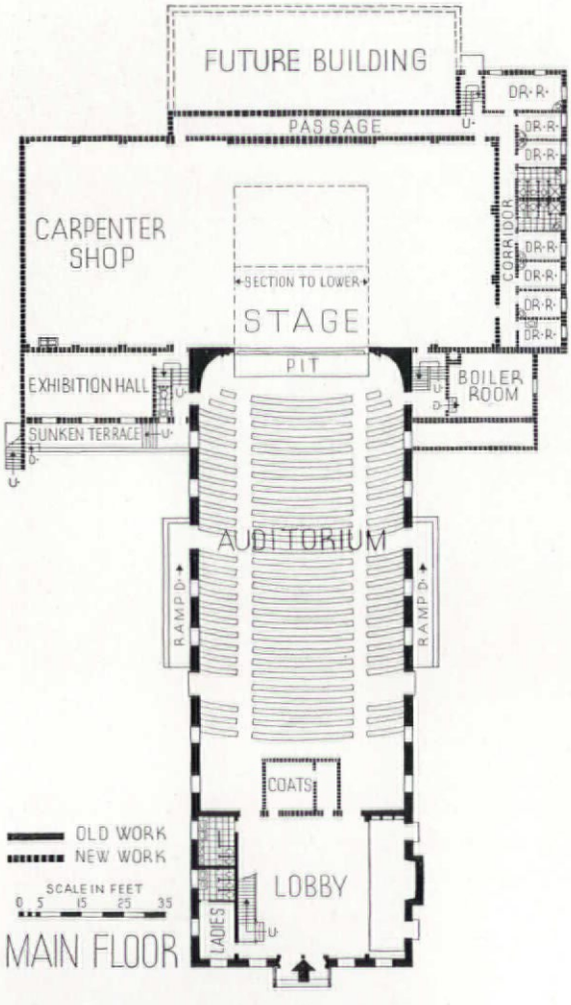
PLOT PLAN



THIRD FLOOR



SECOND FLOOR



MAIN FLOOR

STAGE ARRANGEMENT

Extremely rapid scene changes are made possible by the wagon stage. This stage comprises a platform large enough to hold a complete set and rollers. Shifting the mobile platform largely eliminates the handling of scenery. Ample space is provided around the playing area for five stages; two on each side and one at the back. Jacks under the two 10 x 20 ft. stage floor sections allow them to be raised or lowered. Further flexibility is secured by removable traps in each section. A cross-over corridor back of the stage cyclorama wall, served by doors at each end of the playing space, aids backstage circulation.

CONSTRUCTION OUTLINE

FOUNDATION

Walls and cellar floor—reenforced concrete. Waterproofing—membrane in all walls and floors below grade.

STRUCTURE

Exterior walls of stage building—structural steel and hollow tile faced with brick. Auditorium walls—4 in. furring and pine paneling. Interior partitions—fireproof tile. Floor construction: Auditorium—concrete, Stage—concrete and wood. Floors in dressing rooms, etc., of concrete.

ROOF

Auditorium roof—wood on steel trusses. Roof of stage—steel with Porete slabs. Asbestos shingles, The Ruberoid Co.

CHIMNEY

Brick with tile flue lining. Fireplace—stone face and stone hearth.

SHEET METAL WORK

Flashing and Leaders—copper. Gutters—wood and copper.

INSULATION

Outside walls of auditorium—insulated with wool bats.

WINDOWS

In general double hung; where large windows are used they are casement windows, Fenestra steel, The Detroit Steel Products Co. Glass—steel sash, polished plate glass, ¼ in. thick. Screens—copper mesh.

STAIRS

Steel with concrete filled treads. Stairs in lobby—pine; handrails, newels and strings of pine, treads—oak.

FLOORS

Lobby floor—2 in. pine boards of 8, 10 and 12 in. width, with flag stone hearth in front of fireplace. Floor of auditorium—concrete, covered with carpet. All bathrooms, toilets and kitchens—tile floors, American Mosaic Tile Co. Floors in offices and studios—covered with linoleum, 3/16 in. gauge, Congoleum-Nairn Co.

WALL COVERINGS

Auditorium and lobby—pine and plaster. Dressing rooms and work rooms—hollow tile, painted. Backstage—hollow tile, painted. All coverings in offices and studios—pine and plaster.

WOODWORK

Trim, shelving, cabinets and interior and exterior doors—white pine.

HARDWARE

Interior—plated bronze or hand wrought iron, P. & F. Corbin. Exterior—bronze.

PAINTING

All plaster—natural sand finish. All interior woodwork, trim, paneling, etc.—pine, waxed natural finish. Stage walls—painted with mill white, A. L. Rice, Inc. Exterior sash and trim—Atlantic white lead and linseed oil paint.

ELECTRIC INSTALLATION

Wiring system and switches—BX cable, General Electric Co. Fixtures—indirect lighting to be installed in the auditorium.

PLUMBING

All fixtures by Kohler Co. Hot and cold water piping—Anaconda copper. Other pipes—cast iron or A. M. Byers' wrought iron.

HEATING AND AIR CONDITIONING

Combination of circulated air and direct radiation. Air conditioning equipment by Buffalo Forge Co. Boiler—Fitzgibbons Boiler Co., Inc. Oil burner—Arthur H. Ballard, Inc. Radiators—American Radiator Co. Valves—Jenkins & Dunham. Hot water heater connected to boiler.

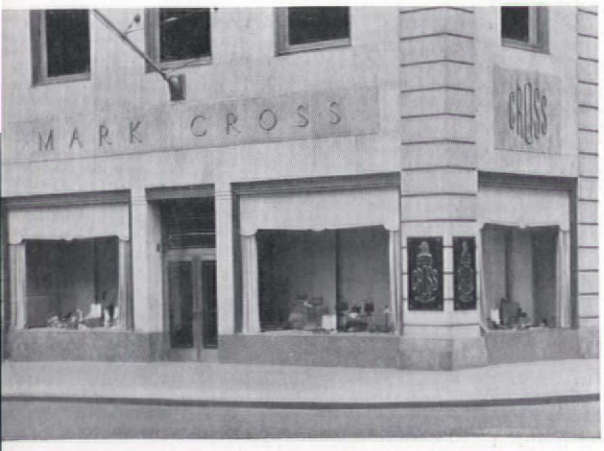
MARK CROSS STORE, NEW YORK

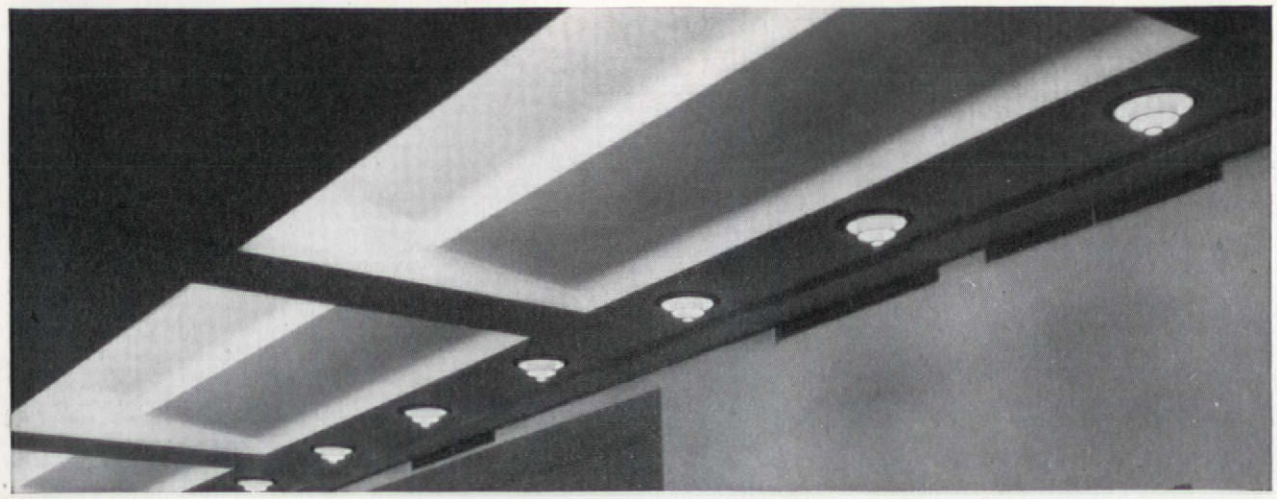


John Beinert Photos

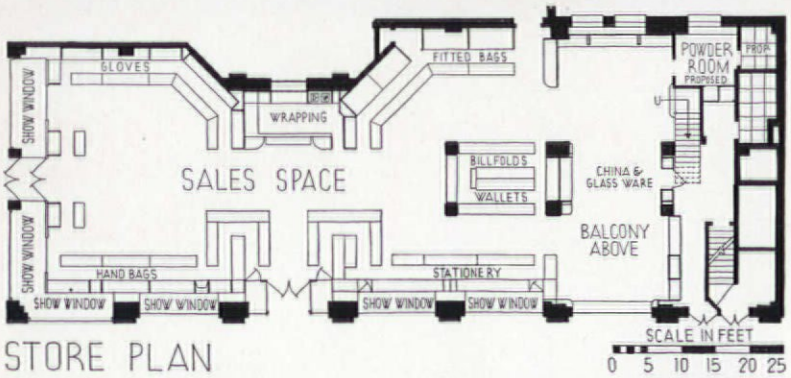
PRUITT AND BROWN, ARCHITECTS
D. EVERETT WAID, ASSOCIATE

Shop remodeling as a rule does not involve vital structural changes in a building, the problem being chiefly one of creating a suitable interior within existing limitations. When a bank becomes a store selling leather goods, however, the change is sufficiently great to require a major operation. The bank which preceded the Mark Cross store left behind it a set of very massive doors, heavy masonry exterior walls, a number of false columns, and an uncommonly large vault, which, incidentally, supported the floor above it. It was with considerable difficulty that these cumbrous items were removed. The shop exterior called for a severe front, not too much at variance with the remainder of the building, with large windows so designed that the passer-by can look through into the store itself. The same restrained quality which characterizes the exterior carries through on the inside of the shop. No color whatever is used; walls are of white plaster, fixtures are of natural finish white mahogany, and the floors are in neutral shades of rubber tile. The idea behind such simplicity —and it is a sound one—is that leather appears to better advantage when its own color does not have unnecessary competition from surrounding objects.





CEILING DETAIL



STORE PLAN

The same merchandising approach used in the elimination of colors is seen in the design of the fixtures. Counters are unusually low so that the customer can remain seated while making a selection, and the lighting is designed to illuminate clerks and merchandise while leaving the customer in comparative obscurity. There is an excellent balance between direct and indirect lighting. For its careful selection of materials, and design of lighting fixtures, and other aids to selling, the shop is one of the most noteworthy of the past year.



DISPLAY FIXTURES

CONSTRUCTION OUTLINE

STORE FRONT
Base—granite. Facing—limestone. Show windows—bronze, Kawneer Co. Doors—bronze, Atlantic Metal Products Co.

LATH AND PLASTER
Bondcrete and plaster of paris, U. S. Gypsum Co., hydrated lime, The Kelley Island Lime & Transport Co.

FLOOR COVERING
Rubber tile, Armstrong Cork Products Co.

WOOD WORK
Show cases, counters and cabinets—Primavera white mahogany veneer, manufactured and installed by Amman-Goertz Co.

HARDWARE
All by P. & F. Corbin.

ELECTRICAL WORK
Wiring—rigid conduit. Panels—Cole Metal Products Co. Switches and receptacles—Hubbell Co. Lighting fixtures—Kantack, Inc., New York, N. Y.

PLUMBING
Supply pipes—brass, Bridgeport Brass Co. Waste pipes—steel, National Tube Co. Old fixtures were used for most part.

HEATING & AIR CONDITIONING
Radiators—American Radiator Co. Pipe Fittings—Kuhn Bros. Valves—Dunham Co. Pipe insulation—Johns-Manville Corp. Bronze grilles—Tuttle & Bailey. Air Conditioning—Frigidaire Corp. Ducts—Wheeling Steel Corp. Registers—Uni-Flo Grille Co.

COST TECHNIQUES

An evaluation of construction cost data, including the basis and application of all the major methods of estimating building cost.

A radio, a tin can, or a battleship has a production cost which is determinable to the penny. Give a qualified cost accountant some data sheets, a slide rule, and a few days and he can figure it for you with the same certainty as that with which he can multiply two by two. But ask an equally well qualified man to give you the production cost of a building and the first thing he will do is scratch his chin. Then he will squint coldly at the building, kick a few walls, peer dubiously at the contractor's figures—and hazard a guess. And he will get about as close as anybody can get in estimating the production cost, the reproduction cost, the net worth, of a building. For building is not as other industries; economically it is not only behind the times, but out of step with them.

This fact is too seldom realized by people connected with the building industry, and almost never by its clients, the purchasers of homes. Accustomed to accurate cost accounting procedure in their own fields, they invariably tend to place too much confidence in their ability to interpret building cost figures. The results disappoint and sour them.

The reason most industries have achieved cost accounting systems accurate to decimal points is that they deal in constant units. Continuous and tremendous production has hammered the price of the standard bolt, of the radio tube, of the crank-case down to a bed-rock figure where it can be counted on to stay. Thus cost accounting in mass production industries comes in time to be little more than simple addition. Two feet of tin plus one gram of solder equals one tin can. But a building is not a standardized product. On the contrary it is, with the possible exception of a sail boat, the most temperamental, the most unpredictable inanimate mass there is.

Two buildings are seldom exactly alike, seldom are they produced under identical conditions. Building is not a mass production industry and therefore it does not have its control centered under a few large managements, each directing and keeping accurate records of a large number of operations. Rather it is a bringing together of many small activities, the production of many incredibly variable materials, the use of the greatest number of labor unions in any industry. Intruding into every job is the small man, the sub-subcontractor who never heard of accounting and keeps his office in his hat. To labor the point, a building must be erected out of doors, on the site, and must therefore submit to the indignities of climate, the variables of transportation, the foibles of the local labor, and the tricks of the terrain. Small wonder it is that buildings cannot submit to standardization, and hence to mass production, and hence to accurate cost accounting.

And yet buildings today are one of the country's major bases of credit, and it has become imperative to discover some form of accounting for their evaluation. For investment purposes alone, for instance, the probable cost of a projected building must be determined and that actual price must bear a close relation to its reproduction cost. Caught between this necessity and the vagueness of its methods, the building industry has done its valiant best by throwing open to the public, in a manner which in any other business would be considered shameless, its complete cost data. The theory, of course, is that from the basis of these cost data on past jobs some sort of comparisons can be drawn for future estimates. But the theory is a hazardous one; for these cost data culled from the records of the past are among the most deceptive statistical materials ever to be put in general use. Cost estimating is not a matter of simple arithmetic in the building industry as it is elsewhere. The data of building must be weighed, its sources examined, its accuracy pondered. The purpose of this article to to present and examine the types of cost data now available so that, having been dissected, they may be used with intelligence and with discretion.

The construction of a building brings together many diverse producers of goods and services under a loose direction. This central management has no control over the separate businesses involved, hence no control over the costs of these businesses and no control over their methods of keeping costs. A general contractor or builder will purchase directly certain materials and equipment and will often employ some labor. A large part of the work, however, he lets out to subcontractors, each of whom in turn employs his own labor, purchases his own materials. The subcontractor may in turn sublet some of the work which he has contracted to install. Each extra contractor means a different system of records, and sometimes none at all. Each contract involves a separate setting of price.

Hence, in the building industry there are practically no basic costs. The cost data consist in the main of prices arbitrarily set for each contract in the project. These prices are not based upon determined costs, but in each case are estimates of costs which are made in advance by the various contractors. They represent each contractor's allowances for variations in the price and quality of materials, and labor, for lost time due to climatic conditions and the work of others over whom the estimator has no control, for overhead costs, for mistakes in the interpretation of a usually rather vague specification. The estimate of cost so arrived at is further modified by the contractor's desire for profit, a desire which varies according to the particular job, and his guess as to what his competitors will bid. It is still further changed by the bargaining power of the purchaser or contractor.

The resultant price is in no sense closely related to true cost. In this indirect way are prices which represent cost to the ultimate consumer or purchaser reached.

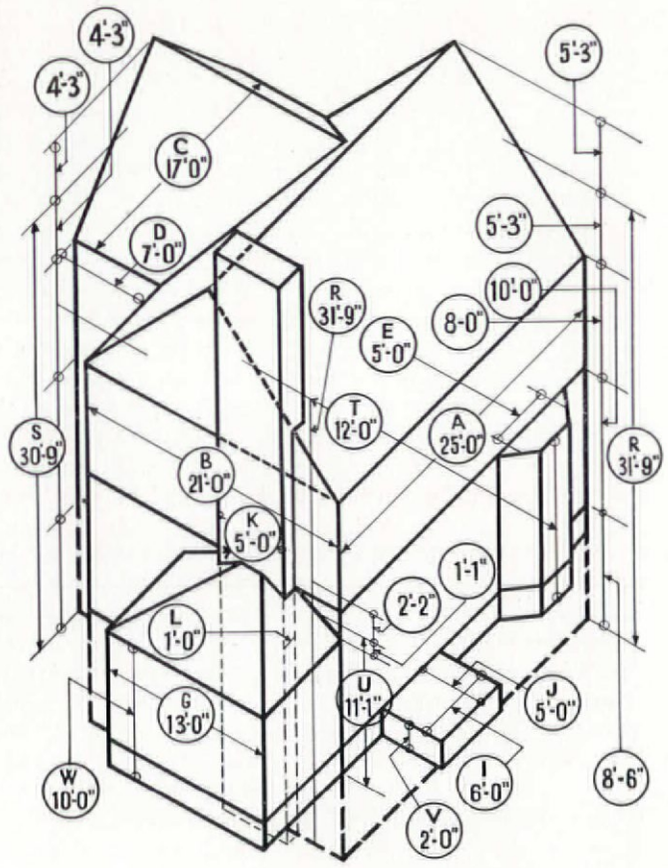
CUBIC AND SQUARE FOOT ESTIMATING

In order that these prices may be compared and utilized for rough estimating purposes, they must be reduced to some common denominator. Since there is no denominator

actually common even to two similar buildings, a number of them are in use for purposes of approximate comparison. Such denominators are the cubic foot calculated from the volume of the building, the square foot of floor or ground area, and the indices of cost.

The simplest common denominators of building cost are those of size. They are also the most logical from the standpoint of use, since size is a quality closely related to utility. These size factors are the room, the cubic foot, and the square foot. Except in certain special cases, the room is too large a unit and contains too great variations within itself to have much value for any but the roughest cost comparisons. The cubic foot —probably the commonest means of measuring or comparing costs—and the square foot are useful measures in the hands of those who understand their limitations but are often very misleading when applied without discrimination. Being basically the same, they are subject to the same general criticisms.

The cubic foot is a measure of the volume within the bounding surfaces of a building. The square foot is a measure of the floor area, except when used, as it sometimes is, by real estate men as a measure of the ground area covered by a house. Unfortunately, there are no generally accepted rules for calculating either building volumes or areas. Variations in practice may cause differences of 5 to 8 per cent in the results. There is also no standard as to what items of cost are to be included or excluded. Fees, certain kinds of equipment, even landscaping may or may not be included. The exclusion



Identification	Dimensions	Area	Sq. Ft. Factor	Height	Sq.Ft.	Cu.Ft.
	A B		N	R		
HOUSE	25 x 21	525	2.0	32.0	1,050	16,800
	C D		N	S		
HOUSE	17 x 7	119	2.0	31.0	238	3,689
	E F		O	T		
BAY	5 x 2	10	1.0	12.0	10	120
	G H		P	U		
PORCH	13 x 8	104	.5	5.5	52	572
	I J		Q	V		
TERRACE	6 x 5	30	.25	1.0	7	30
	K L		N	R		
CHIMNEY	5 x 1	5	2.0	32.0	10	160
TOTALS					1,367	21,371

CALCULATION OF CUBIC VOLUME

Cubic volume of the building improvements shall be computed as follows:

1) To be included and calculated in full:
   The actual space enclosed within the outer surfaces of the outside walls and between the bottom of the basement floor slab, or, in unexcavated areas, between the ground and the outside of the roof, including bays, oriels, light shafts, dormers, and exterior chimneys up to the average height of the roof, enclosed porches and built-in garages.
2) To be included and calculated in part:
   a. Non-enclosed porches
      1. Within house proper — 2/3 volume
      2. As an extension to house — 1/2 volume
   b. Masonry terraces supported on foundation walls — 1/2 volume
3) Not to be included:
   Outside steps, cornices, parapets, and footings.

CALCULATION OF SQUARE FOOT AREA

The square foot area of building improvements shall be computed as follows:

1) To be included and calculated in full:
   The finished and livable floor area above the basement, including bays, oriels, dormers, light shafts, exterior chimneys, enclosed porches, and built-in garages. In computing these areas, measurements shall be taken to the outside surfaces of the exterior walls or partitions enclosing the areas.
2) To be included and calculated in part:
   a. Finished livable area of basement, such as a recreation room, or servants' quarters, measured to the outside of exterior walls or partitions — 1/2 area
   b. Semi-finished area of attic, not used as a livable area measured to the outside of exterior walls or partitions — 1/2 area
   c. Non-enclosed porches:
      1. Within house proper — 2/3 area
      2. As an extension to house — 1/2 area
   d. Masonry terraces supported on foundation walls — 1/4 area
3) Not to be included:
   Outside steps, cornices, parapets, and footings.

EXAMPLE

This example shows the uniform method of calculating cubic volume and square foot area of the building shown in the isometric above. For convenience, the dimensions are identified in both the sketch and computations by capital letters just above the dimensions. Dimensions are given by feet and inches on the sketches and are converted into decimals to the nearest half foot in the computations. This practice is considered sufficiently accurate.

The above material is taken from the Underwriting Manual of the Federal Housing Administration.

or inclusion of such items may affect the precision of the result by as much as 20 per cent.

In order to make this type of cost data more useful, certain organizations have suggested or established their own standards. The American Institute of Architects has a suggested standard for calculating volume. Based on this, but more detailed and definite is the method for figuring volume and area set up by the Federal Housing Administration. Because of the clarity of this standard (which also defines the items which are to be included in calculating cost), because of its compulsory use by FHA offices in every State, and because of the large number of appraisers, architects, and estimators who are being trained in its methods, it would seem that the FHA standard might well become a commonly accepted one. It has therefore been reproduced on page 108 and its use is recommended.

The Federal Housing Administration's estimates, made for purposes of valuation, are "estimates of cost required to replace building improvements in new condition." These estimates include the cost of all labor, materials, subcontracts, inspection fees, permits, builders' overhead and profit, and architectural fees. Separate estimates are made for:

1. Main building, including porches and attached masonry terraces when supported on foundation walls.
2. Garage and other accessory buildings.
3. Walks, drives, and terraces laid on the ground.
4. Private septic tank, well, and electric generating plant.

Their estimates do not include landscaping—shrubs, trees, grass, retaining walls, grading of site—or chattels, that is, equipment and accessories which are not in a legal sense part of the realty.

Estimates are made on both the cubic and square foot basis and the results averaged.

There are other types of variations disturbing the precision of cubic and square foot costs which cannot be eliminated by establishing standards. The effect of common variations in design arrangement and specification on these unit costs cannot be readily calculated, although they can, to a certain extent, be compensated for.

It is readily seen that buildings having the same volume or floor area may have entirely different shapes, that these differences may mean more or less exterior wall, partition, and roof, and hence a greater or less cost. Structures with the same floor area may have different ceiling heights, different roof arrangements, more or less cellar, and hence different volumes, and their cubic foot costs will therefore vary without any direct relation to their actual costs. Buildings similar in plan and size vary considerably in quality and materials, equipment, and workmanship, all of which affect the cost. Such differences are not taken into account when costs are estimated or compared on a volume or area basis.

Enough has been said to make clear the inaccuracy of cubic foot and square foot costs. Such cost figures are, however, quite useful for rough estimating or cost comparison purposes when enough of the data is known and interpreted.

There are several modifications of the simple cubic or square foot methods. In most of these, a number of basic types and qualities of buildings are selected and priced. Tables are then constructed to show the variations in cost caused by changes in size, materials of construction, equipment, basements, bathrooms, etc. When such cost variations are based upon a volume of experience records and when ample specification data and cost variations are given, this method of estimating may be used with reasonable accuracy.

IN-PLACE UNIT PRICE ESTIMATING

Another method of estimating or comparing costs involves the use of *in-place unit prices*. The in-place unit price represents the combined costs of labor, materials, overhead and profit needed to put the unit in place in the building. If, for example, the total cost including brick, mortar, labor, overhead, equipment rental, etc., of building a brick wall containing 10,000 bricks is $400, the "in-place cost" would be $40 per thousand bricks. This unit price might be further changed to show the price per square foot of surface area of the wall. If the wall were 8 inches thick it would, including some allowance for breakage, contain 14 bricks to the square foot; hence the in-place unit price would be 56 cents per square foot of surface area.

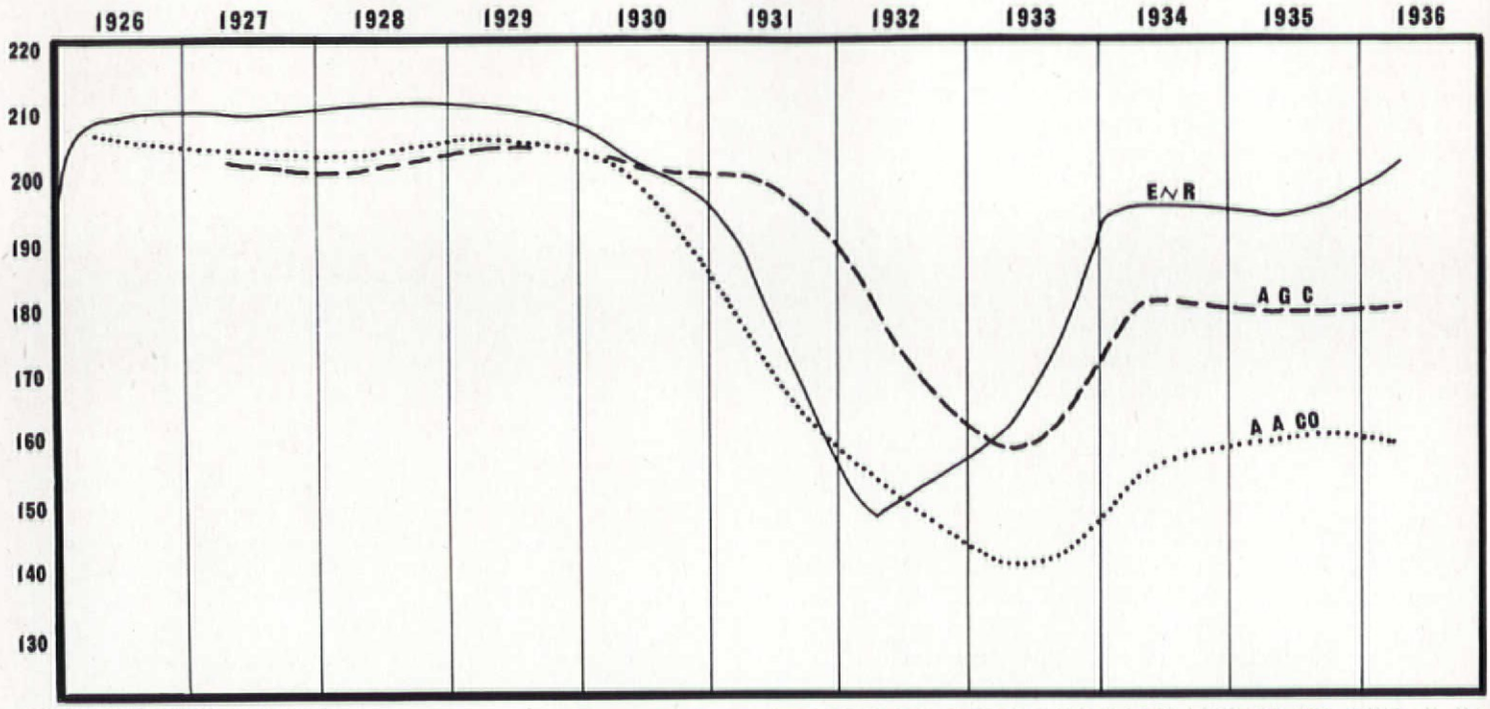
In-place prices of this kind are very useful in comparing the costs of different materials considered for the same purpose. Such a price is, in fact, one of the considerations which should be taken into account before a decision regarding a material is made. With a knowledge of in-place unit prices, the cost of changes to plans or buildings can be quickly and accurately estimated.

The in-place unit price method of cost estimating is designed to reduce to a minimum the work of measurement and calculation. This is accomplished by adding together the cost of all items entering into a square foot of each type of surface such as walls, or floors. These square foot costs are then divided into the total areas of their respective types of surface. The cost of those parts of the building which cannot readily be reduced to square feet is estimated by applying a price per unit to the total number of units involved. The in-place unit price method also divides the building into structural elements. These are grouped together into parts having approximately the same surface areas or quantities of like units. Examples of parts having the same surface areas are foundations, floors, roof, exterior walls, partitions; like units are such things as doors and windows. Illustrations of how prices are built up are shown on pp. 58 to 61 of THE ARCHITECTURAL FORUM for July, 1936. To provide proper allowances for waste and miscellaneous items, checks and balances are used, simplifying measurement and quantity calculation, and eliminating the need for figuring in many small items.

With such a method it is easy to make adjustments for variations in size, specification, and circumstances surrounding construction. The method is more exact than the cubic or square foot method, and if the cost data are reasonably correct and properly used, the resulting estimates should be quite close to those secured by competitive bids, a degree of exactness sufficient for most purposes.

A means of cost comparison occasionally used is a breakdown by trades as percentages of the whole cost, or as a cost per cubic foot for each trade. While generally these figures are not sufficiently consistent to be of any value, there are some trades which maintain a fairly

BUILDING COST INDICES 1926-36 (1913=100)



ENGINEERING NEWS RECORD	INDEX BASED ON	COSTS OF STEEL (PITTSBURGH) CEMENT (CHICAGO) LUMBER (SO. PINE, N. Y.) LABOR RATES=20 CITIES.
AMERICAN APPRAISAL CO.	INDEX BASED ON	MONTHLY CONSTRUCTION COSTS, WEIGHTED IN ACCORDANCE WITH COST% DETERMINED FROM BUILDINGS OF EACH TYPE ACTUALLY CONSTRUCTED.
ASSOC. GEN. CONTR. AMERICA	INDEX BASED ON	COMPOSITE OF WAGE AND MATERIAL INDICES, IN THE PROPORTION OF LABOR=40% MATERIALS=60%.

constant percentage of the total cost, such as plumbing, which almost always accounts for 8 to 10 per cent of the construction cost.

COST INDICES

For cost analysis purposes, a separation is often made between material and labor. Contrary to popular belief, the separation is not about fifty-fifty; direct labor usually receives considerably less than one-half of the cost, often less than one-third. Figures of this type should be confined in their application to checking on other methods of figuring.

In any consideration of cost figures, variations due to locale must be accounted for. In some types of construction such variations are considerable, in others, very small. Costs not only vary regionally, but there is considerable variation within a region (see FHLBB Index Forum, April 1936, p. 237). Almost as great a range in the cost of residential construction occurs within a radius of fifty miles from the center of any large city as is found in different parts of the country. Such variations are not entirely due to differences in wage scales. They are occasioned by differences in the productivity of labor, by local practices and building codes, by differences in acceptable standards of quality, and by transportation costs.

Everyone realizes, of course, that costs, particularly of materials and labor, change with time as well as location. To show how much costs change from period to period, a number of construction cost indices are charted above. None of them, it is safe to say, is accurate enough to show more than a trend. To attempt to calculate the replacement cost of a building from its known cost and any of the indices of cost changes is likely to give a result quite wide of the mark.

Most well known national indices are based on the price of labor and materials, or materials alone. They do not take into account overhead items and profit, which represent about 20 per cent of the cost of construction. Most of them use only a few materials, and their weighting for these materials and for labor is not representative of changing practices which affect the relative amounts of such materials and labor actually used. Published or quoted prices, and established wage scales (usually union) are commonly used, and particularly in times of stress these are not indicative of prices actually paid.

Probably closer to the mark are those cost indices based on specific costs. A building or buildings representative of various types, sometimes buildings which have actually been constructed, are reestimated periodically. Such estimates usually take into account all the items entering into the construction of the building, and may even be based on actual rather than quoted prices.

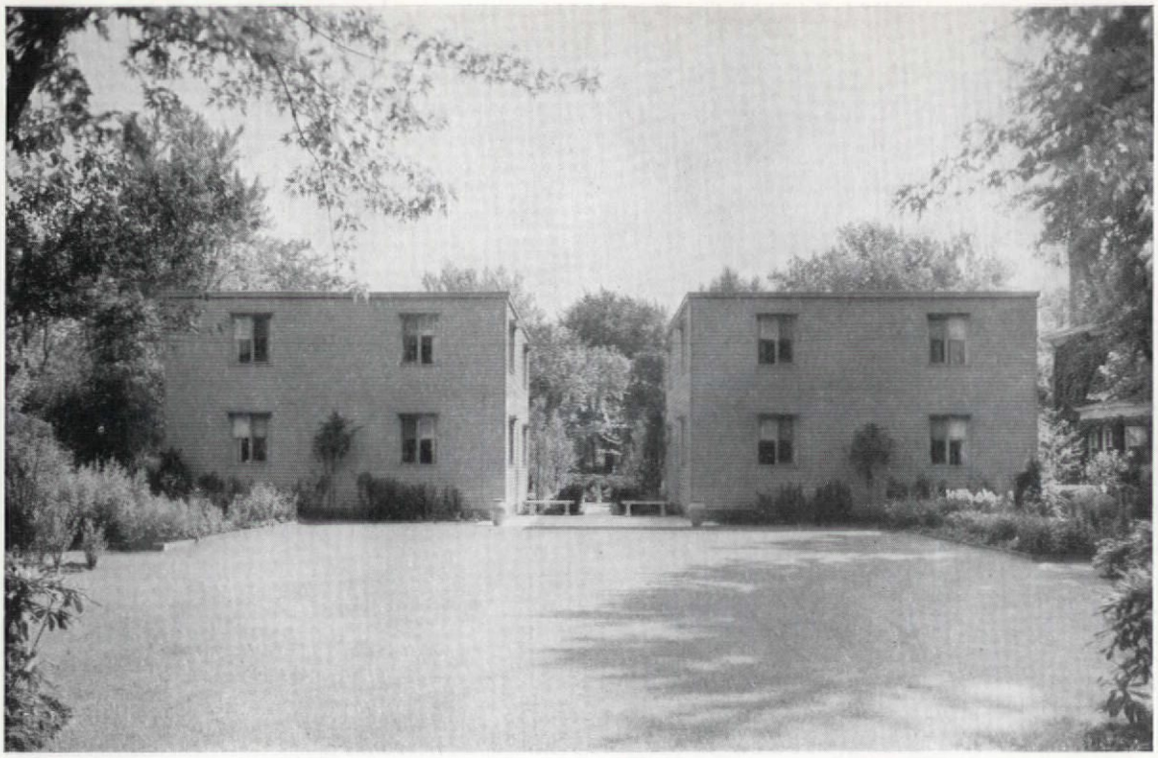
However, the failure of cost indices to show like variations in cost changes indicates that no great reliance can be placed in these figures. From a study of the available data on construction costs, it seems clear that they are inadequate to measure either the level of changing costs for different types of structures in different geographic locations, or to indicate with any degree of certainty specific costs at a definite time. Until uniform and more precise methods of construction cost accounting are established, and practiced, and the records so obtained are made available, the only data which the individual can use with any precision are those which he collects himself, and uses with an understanding of their limitations.

HOUSES FOR T. W. FRECH, CLEVELAND, OHIO

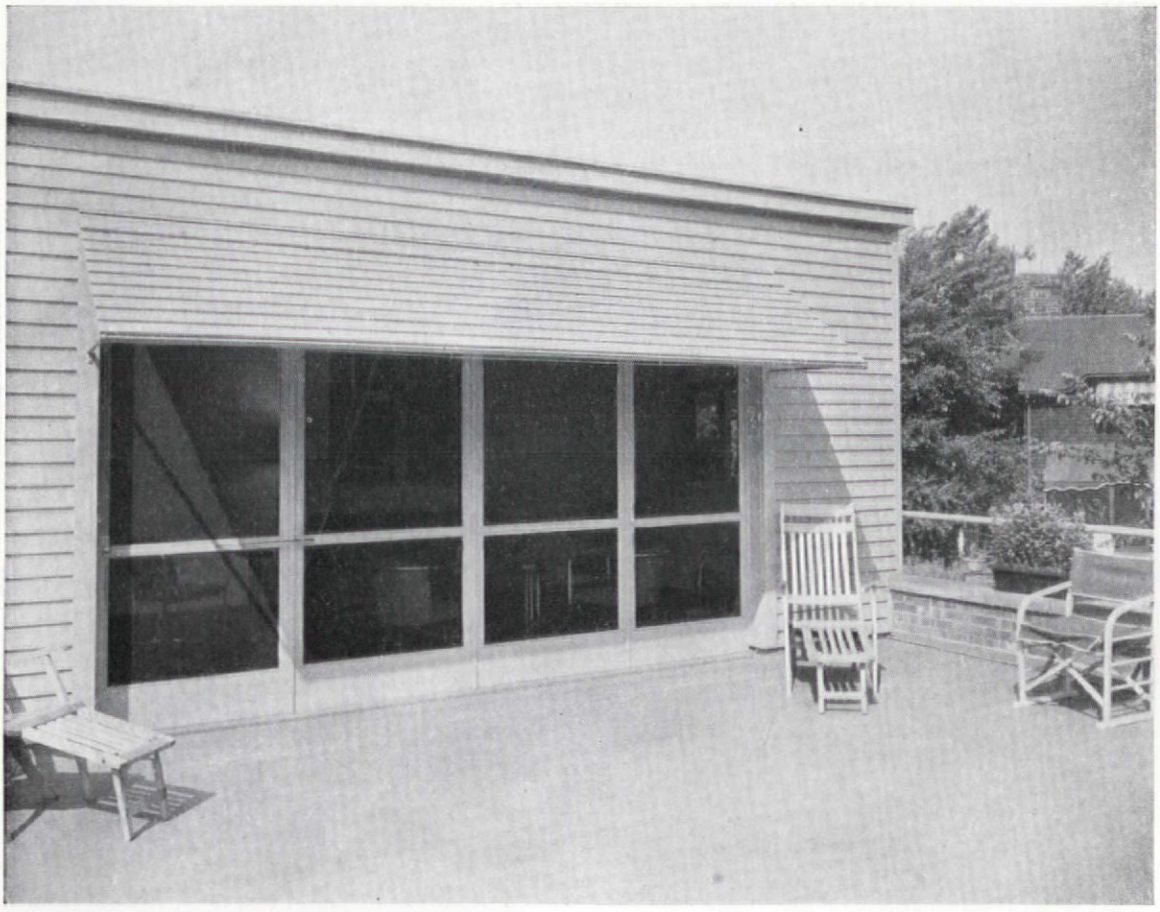


HAYS AND SIMPSON, ARCHITECTS

More than a mere innovation in facade treatment, this pair of houses represents an interesting experiment in real estate practice. The owner had noticed that many vacant lots remained in older residential sections with a resultant waste of utilities and municipal services provided, and often proving a burden on the owners who could not sell them in competition with newer developments. To determine the feasibility of furnishing high-class rental accommodations in such neighborhoods these two houses were built. They occupy a lot of 100 foot frontage, half the amount used by the houses nearby. Neighbors feared that the project would lower property values, but when the houses were completed and landscaped their apprehension faded. Modern in their simplicity, the houses would be a credit to any locality. The garages in front not only leave the rear free for gardens, but furnish terraces off the second floor living rooms. The owner was so pleased with the houses that he moved into one and uses the other as a guest house. The number of would-be tenants who applied was proof enough that building up such vacant areas is financially sound. Cost (per house): $13,200. Cubage: 29,309 at about 45 cents.

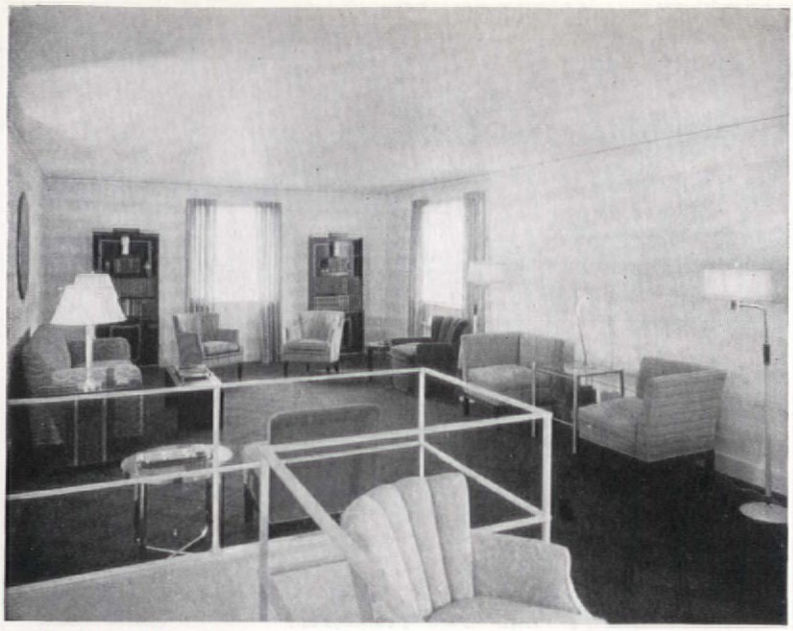


GARDEN



DECK AND SCREENED PORCH

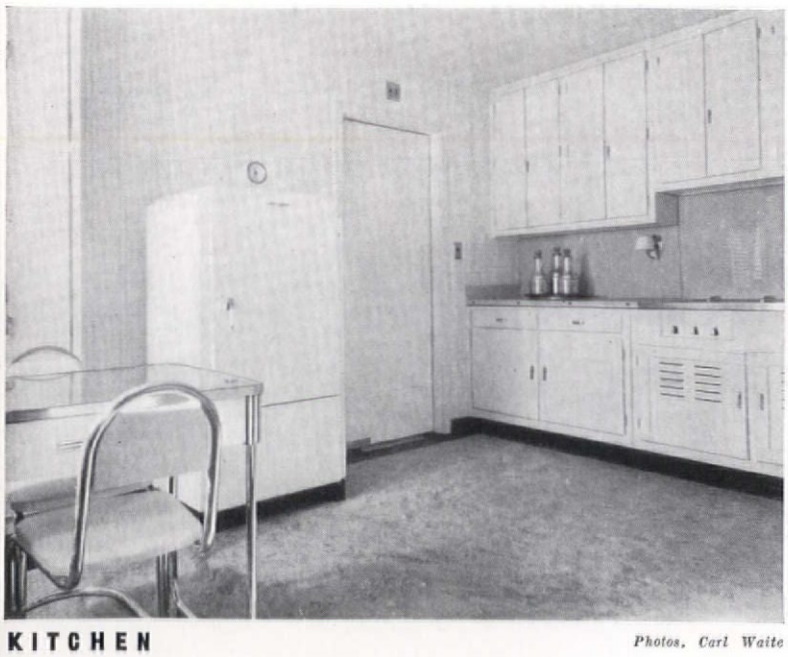
Photos, Carl Waite



LIVING ROOM

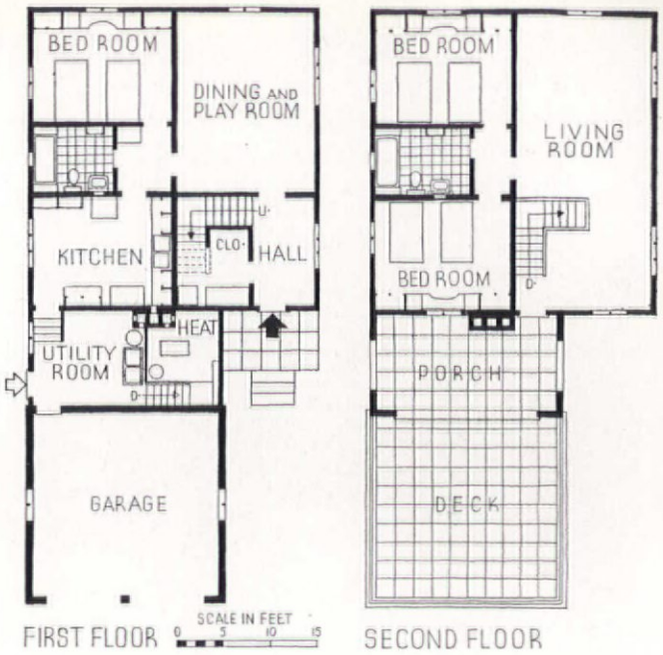


BEDROOM



KITCHEN

Photos, Carl Waite



The view of the bedroom on the left shows the built-in equipment, which compresses two large closets, two chests of drawers, and a dressing table into one end of the bedroom. The large window is well placed for lighting the dressing table.

CONSTRUCTION OUTLINE

FOUNDATION
Walls—continuous Haydite; brick outside above finished grade. Cellar floor—cement on gravel. Waterproofing—cement and asphalt paint.

STRUCTURE
Exterior walls: Garage walls—brick. House walls—redwood siding over wood sheathing with Sisalcraft paper between. Walls and ceilings—finished in plaster. Floor construction—sub-floor laid on 2 x 10 joists.

ROOF
Flat level with downspout inside, covered with 4-ply roofing with tar and gravel top. Porch deck covered with canvas. Roofing by The Carey Co.

SHEET METAL WORK
Flashing—Toncan iron, Republic Steel Corp. Downspouts—steel pipe.

INSULATION
Outside walls—2 in. rock wool. Roof—4 in. rock wool and aluminum foil as plaster base. Weatherstripping—outside doors only.

WINDOWS
Sash—steel casement, Vento Steel Sash Co. Glass—double strength. Screens—with casement frames.

FLOORS
All rooms have oak flooring, kitchen and bath are covered with linoleum. Second story porch covered with rubber rugs.

WALL COVERINGS
Living room, bedrooms and halls—wall paper. Kitchen and bathrooms—Vitrolite and wall paper.

HARDWARE
Interior and exterior—bronze.

PAINTING
Floors—Minwax. Trim and sash—4 coats oil paint. Exterior walls—4 coats oil paint, all by The Sherwin-Williams Co.

KITCHEN EQUIPMENT
Stove, refrigerator, dishwasher and sink—all by General Electric Co. Cabinet—The Kitchen Maid Corp.

LAUNDRY EQUIPMENT
Sink by Standard Sanitary Mfg. Co. Washing machine and ironer—General Electric Co.

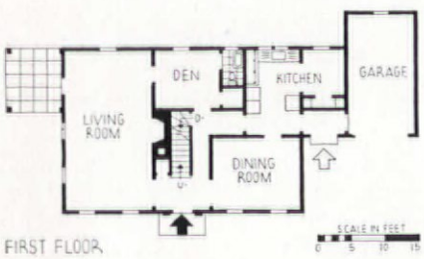
BATHROOM EQUIPMENT
All fixtures by Standard Sanitary Mfg. Co.

PLUMBING
Soil, waste and vent pipes—cast iron. Water supply pipes—copper.

HEATING AND AIR CONDITIONING
Low pressure steam, gas fired boiler, General Electric Co. Radiators—Modine Mfg. Co. Hot water heater—40 gal., Standard Sanitary Mfg. Co.

HOUSE FOR G. G. PHILBROOK, EDGEWOOD, N. H. J. R. HOLBROOK, ARCHITECT





FIRST FLOOR



SECOND FLOOR

There is little doubt that the Colonial house appears to best advantage in the less densely populated regions of New England. Ample building sites and a life free from the complexities of city living have combined to produce houses which differ in few respects from their prototypes. The lack of contrast between the house and its white surroundings brings up the question of color, for which there is excellent precedent; the early houses, painted green, brown, red, or weathered gray, offer a solution which might be more widely used today. The example here, a simple rectangular form with two projecting wings, is pleasant in general appearance and convenient in arrangement. Cost: $5,550. Cubage: 27,000 at about 25 cents.

CONSTRUCTION OUTLINE

FOUNDATION: Walls—continuous concrete. Cellar floor—concrete on gravel fill.
STRUCTURE: Exterior walls—shingles, roofing paper, rough boards, 2 x 4 in. studs, Johns-Manville insulation lath, plaster. Interior partitions—2 coat plaster on Gold Bond wallboard.
ROOF: Roofing paper on rough boards and asphalt shingles, Bird & Son, Inc.
SHEET METAL WORK: Flashing—copper and lead.
WINDOWS: Sash—wood double hung. Glass—single strength, quality B. Screens—copper mesh.
FLOORS: All rooms have oak floors, except kitchen which has fir. Bath and kitchen—covered with linoleum.
WALL COVERINGS: Living room—wall paper and knotty pine paneling; balance—wall paper.
PAINTING: Floors—stained and waxed. Trim and sash—4 coats flat finish. Exterior walls—stained white, Samuel Cabot, Inc.
KITCHEN EQUIPMENT: Stove—Hotpoint, General Electric. Refrigerator—Kelvinator Sales Corp. Sink—Monel metal.
PLUMBING: Supply pipes—brass. Soil, waste and vent pipes—wrought iron.
HEATING AND AIR CONDITIONING: Boiler—Peerless Mfg. Corp. Oil burner—Timken Silent Automatic Co.

HOUSE FOR H. W. DURAND CHATTANOOGA, W. CRUTCHFIELD AND H. G. LAW, ARCHITECTS



A. Charles Hinkle



FIRST FLOOR

While this house was designed for a single occupant, its plan requirements were in no way uncommon. It was built inexpensively of local materials with low maintenance and low first cost as the controlling factors. The owner requested that cross ventilation be provided wherever possible, and the main rooms were laid out with this in mind. A steep slope made possible the use of unexcavated space under the first floor as a garage. The plan is well arranged, with the one bath so placed that it may be used for a guest lavatory as well. Cost: $4,385. Cubage: 33,218 at about 13 cents.

CONSTRUCTION OUTLINE

FOUNDATION: Continuous walls of natural stone. Boiler room and garage—4 in. reenforced concrete floor.

STRUCTURE: Exterior walls—2 x 4 studs, 16 in. on center ⅞ in. storm sheathing, waterproof paper. Yellow pine siding outside, plastered inside.

ROOF: Covered with asphalt shingles, The Flintkote Co.

SHEET METAL WORK: 27 gauge ingot iron.

WINDOWS: Double hung windows, Sampson spot cord and iron weights. Glass—double thick, quality B, Libbey-Owens-Ford Glass Co.

FLOOR: All rooms have select plain white oak, 2¼ x 13/16 in., except bath which has ceramic tile.

WOODWORK: Trim, shelving and cabinets—B. & B. yellow pine. Doors, interior and exterior—white pine.

HARDWARE: Interior and exterior—colonial brass, P. & F. Corbin.

PAINTING: Interior: Floors—all floors sanded, scraped, filled and stained, shellacked and waxed. Trim and sash—4 coats enamel. Exterior walls and sash—3 coats lead and oil.

ELECTRICAL INSTALLATION: Wiring system—BX. Switches—tumbler type. Panel—The Frank Adams Co., standard fixtures.

BATHROOM EQUIPMENT: All fixtures by Standard Sanitary Mfg. Co.

PLUMBING: Soil, waste and vent pipes—cast iron. Water supply pipes—galvanized steel. Septic tank.

HEATING: Warm air—gravity system. Boiler—Weisteel. Furnace and hot water heater—coal-fired.

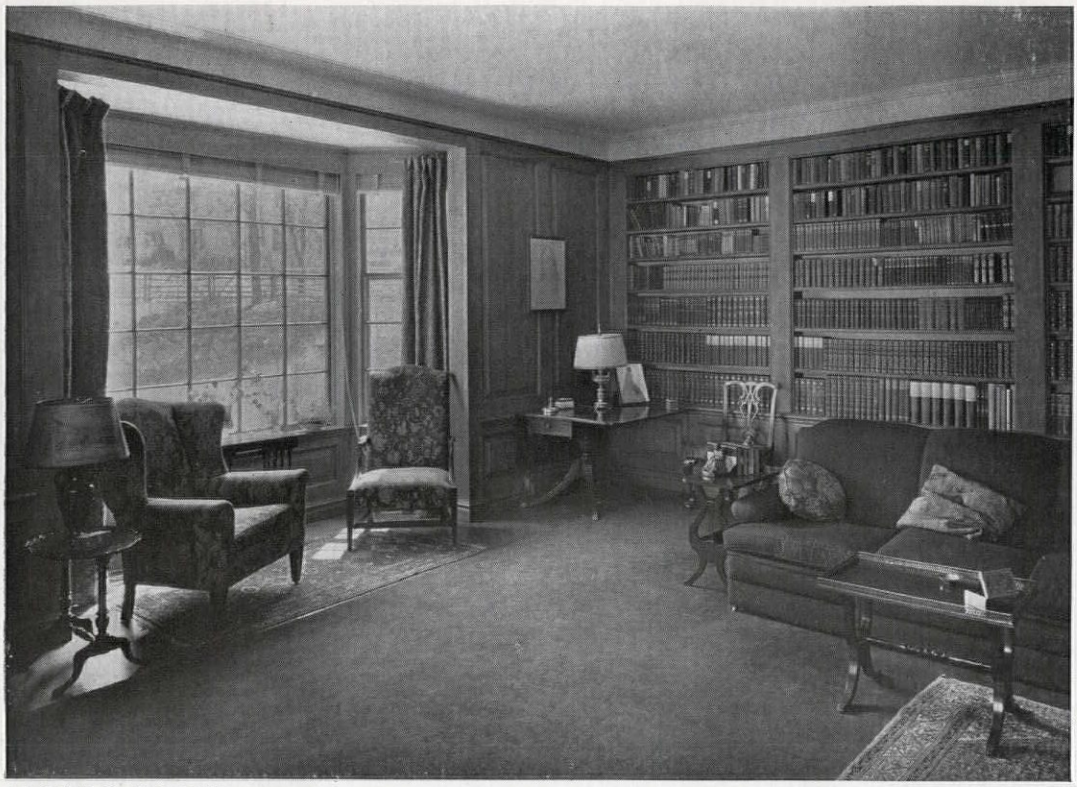
HOUSE IN ARDSLEY-ON-HUDSON, NEW YORK



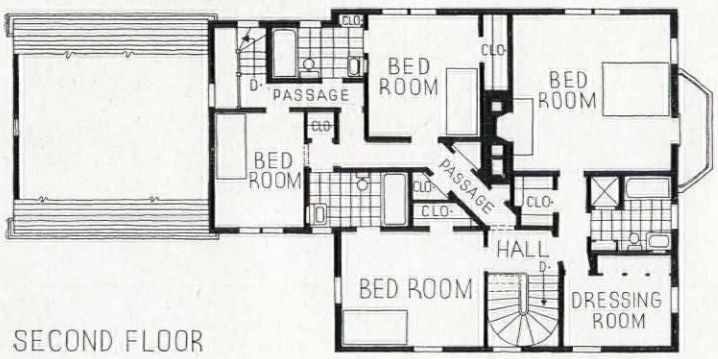
Von Sohnarendorf Photos

At infrequent intervals a house appears which, while modeled on definitely traditional lines, has a vigor and freedom of treatment which sets it apart. Much present-day residential work consists of rather timid adaptations of early houses, showing little of the independence of the seventeenth and eighteenth century American builders who developed endless variations within a few accepted forms. Here the architect has succeeded in creating a distinctive house with something of the quality of the old houses, chiefly by departing from conventional details and by a reversal of the customary scheme of color values. Shutters, which few dare to leave off, have been eliminated with no perceptible detriment to the appearance of the house. The plan is most unusual in its placement of main rooms and service quarters. The play room off the kitchen, which is also used as a children's dining room, is an excellent innovation. The oddly shaped passage on the second floor is the result of a change in the required accommodations, made after construction had begun. Cost: $19,250. Cubage: 55,000 at 35 cents.

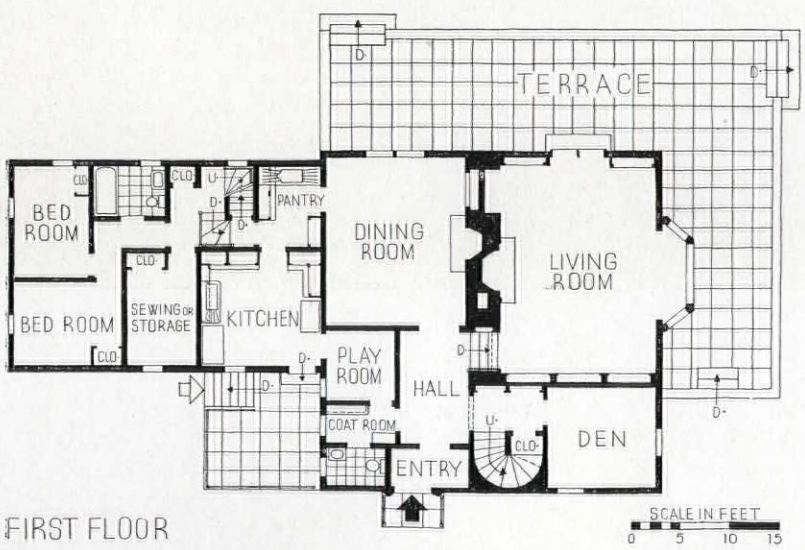




LIVING ROOM



SECOND FLOOR



FIRST FLOOR

CONSTRUCTION OUTLINE

FOUNDATION
Walls—concrete block. Cellar floor—cement on cinder fill. Waterproofing—R.I.W., Toch Bros., Inc.

STRUCTURE
Exterior walls—4 in. stud, wood sheathing, clapboards and flush siding. Interior plaster on Ecod lath, Reynolds Metals Co. Interior partitions—4 in. stud, plaster walls on Ecod lath.

ROOF
Construction—Wood rafters and sheathing covered with black Bangor slate. Deck—covered with leaded copper.

SHEET METAL WORK
Flashing and leaders—leaded copper. Gutters—fir.

INSULATION
Outside walls and attic floor—rock wool, weather-stripping throughout.

WINDOWS
Sash—double hung wood. Glass—quality A, double thick. Screens—bronze mesh, sliding wood frames.

STAIRS
Main stair—oak treads, white pine risers and stringers. Attic stair—Bessler Disappearing Stairway Co.

FLOOR
Living room, bedrooms and halls—quartered white oak. Kitchen—linoleum on N. C. pine. Bathroom—rubber tile on Masonite.

WALL COVERINGS
Living room and den—wood panels. Bedrooms and halls—wall paper. Bathrooms—washable paper.

WOODWORK
Trim—narrow white pine special. Interior doors—stock 6-panel. Garage doors—stock, overhead type.

HARDWARE
Interior and exterior—cast brass, Yale & Towne Mfg. Co.

PAINTING
Interior walls and ceilings of kitchen, service rooms and halls—stained 3 coats. Floors—stain, shellac. Trim and sash—painted 4 coats. Exterior walls and sash—4 coats lead and oil.

ELECTRICAL INSTALLATION
Wiring system—BX cable, toggle switches.

KITCHEN EQUIPMENT
Stove—gas. Refrigerator—electric. Sink—Standard Sanitary Mfg. Co.

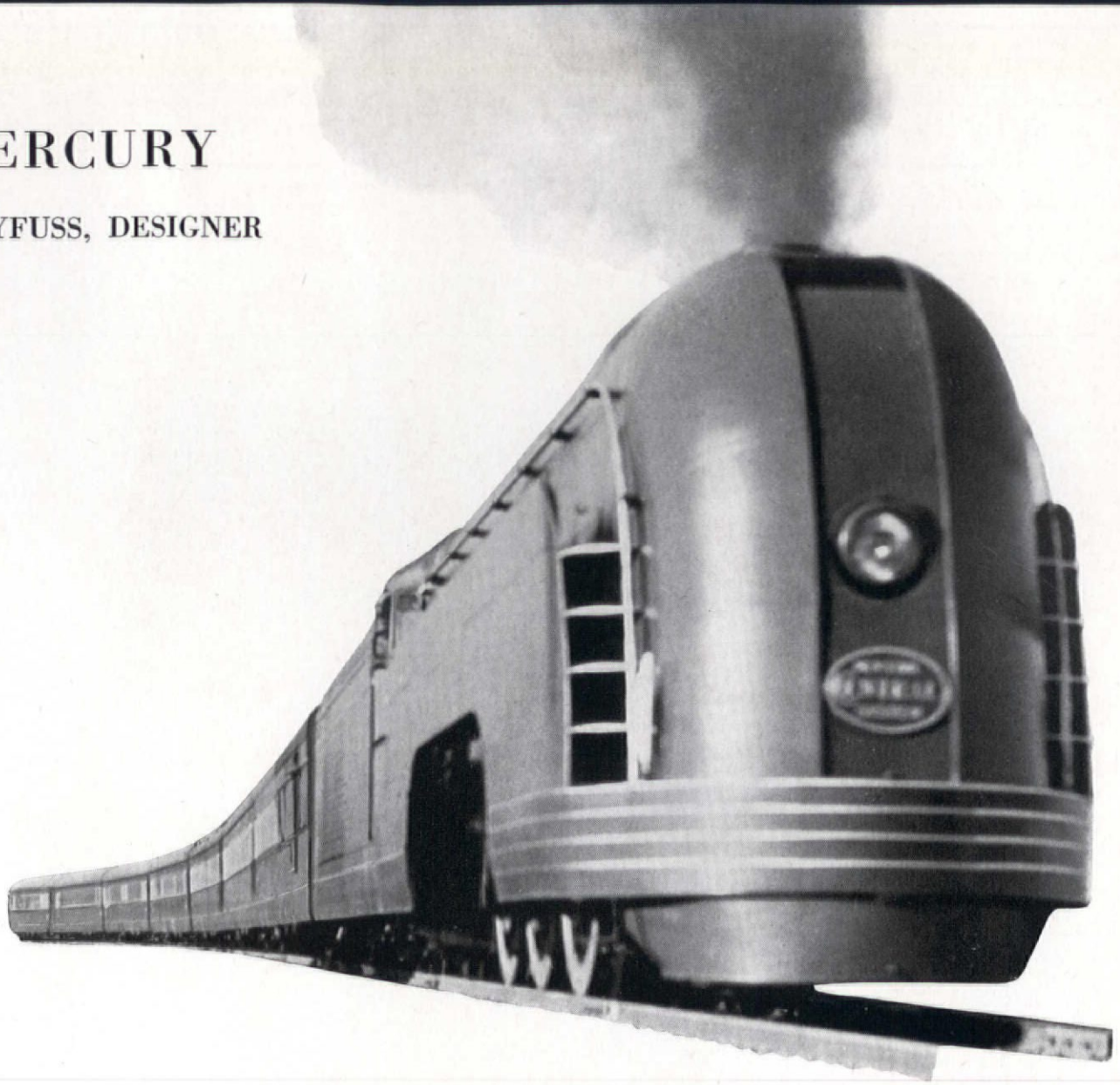
LAUNDRY EQUIPMENT
Sink—Standard Sanitary Mfg. Co.

BATHROOM EQUIPMENT
All fixtures by Standard Sanitary Mfg. Co.

HEATING
Circulating air, Holland Furnace Co. Oil burner—A.B.C., Automatic Burner Corp.

THE MERCURY

HENRY DREYFUSS, DESIGNER



For the railroads and the traveling public the "Mercury" is a landmark; for the architect it is new evidence of an unmistakable trend.

Luxurious transportation at reduced rates and high speed is the railroads' answer to the formidable competition of the automobile, bus, and plane. The problem which faced Henry Dreyfuss when he began work on a train for the New York Central's Detroit to Cleveland run was to provide the finest accommodations the traveling public had ever seen. He did. And the engineers took care of the speed. The "Mercury" is more than a streamlined train. It is a complete, clear statement of the possibilities in train design, exhibiting a high order of constructive imagination. Chief of its characteristics is its air of spaciousness. This quality, of primary importance in the creation of an atmosphere of luxury, is more than a matter of cubic feet. The average railroad car is a rectangular box with two rows of windows; it looks constricted because the passenger can see all of it at once. The scheme adopted for the seven cars of this train, therefore, was one of breaking up these rectangular areas. In one car a centrally located bar does it; in another it is a compartment whose curved walls suggest more space beyond; in the dining car it is done by means of three differently handled sections. This device, let it be noted, is a contribution of modern architecture: the open plan. On the "Mercury" even the vestibules were opened up. No less distinguished are the lighting, use of materials, and color. The lighting does three things: it illuminates the seats, provides general illumination, and forms part of the decorative scheme. Color supplements the lighting, and the schemes which vary from car to car serve to create an effect of decided richness.

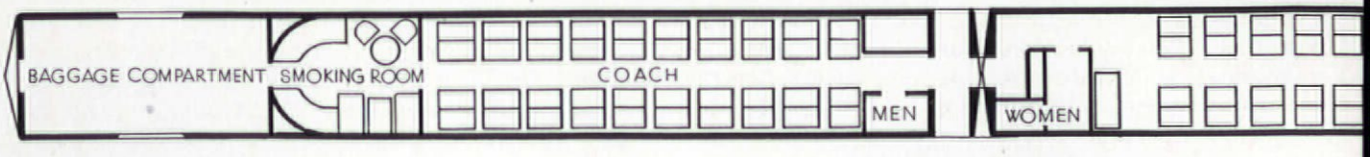
Because the sense of touch is of all the senses the most appreciative of luxury—of the feel of "goods"—Designer Dreyfuss has achieved some of his best and most subtle effects by the introduction of new and unaccustomed materials into his seven cars. There are cork, and linoleum, and rubber tile, and flexwood, and sponge, and new weaves, and prismatic glass, and aluminum.

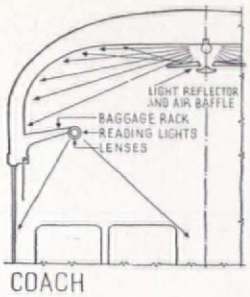
The conveniences are numerous. Drinking water comes from a centrally cooled supply. A check room for baggage and coats is placed at the entrance of each pullman; there is a waiting room in the diner; coaches have individual smokers; and much of the furniture is movable. The observation car is the first to have seats facing out instead of in, and provides a speedometer for the curious.

Industrial design is playing a leading role today because circumstances have forced on it a supremely realistic approach. If architecture continues in more conventional channels, the reason is also, to some extent at least, force of circumstances. Exigencies of machine production are not yet as great in building design as in trains, electric irons, and frying pans. There can be no doubt, however, that a public accustomed to traveling in such trains as the "Mercury" will soon begin to wonder about its houses.

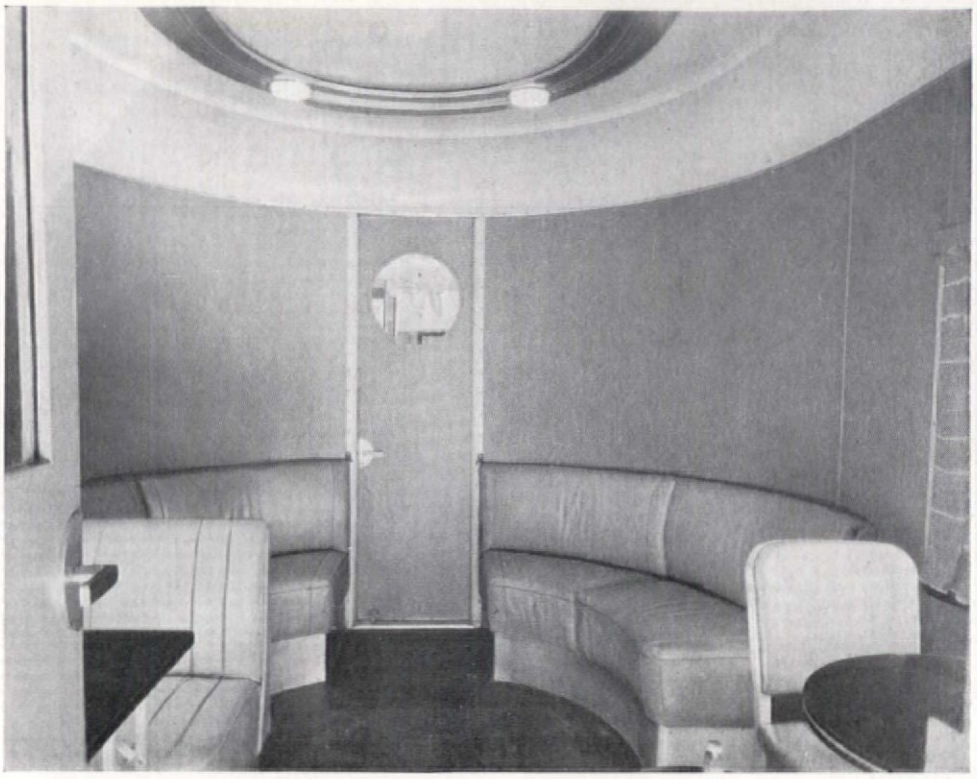


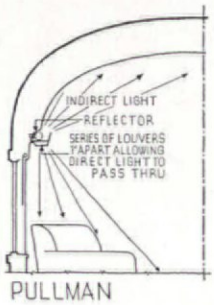
DAY COACH



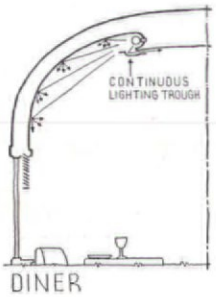


COACH


SMOKING ROOM: COACH



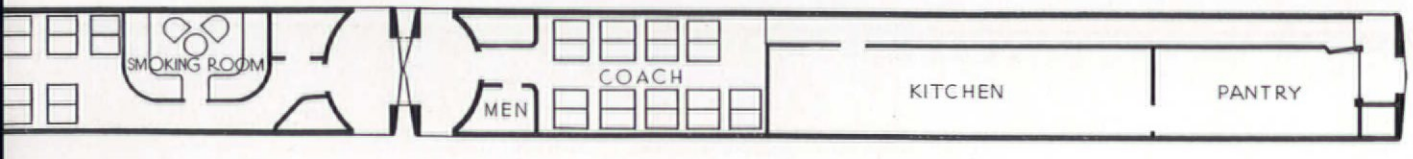
PULLMAN



DINER

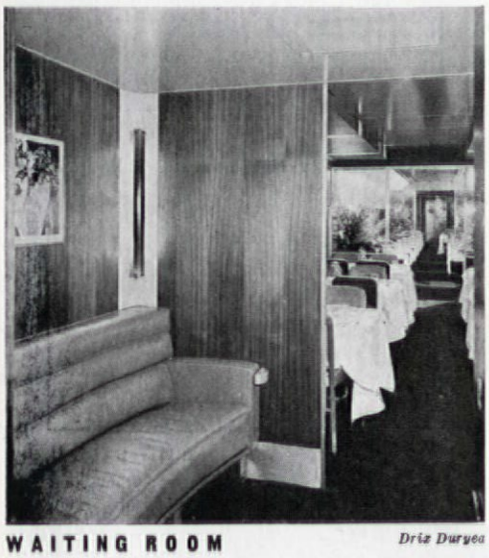

KITCHEN

The lighting fixtures are the result of careful study; all types were built as full-size models before approval. Most of the direct-lighting fixtures are of the fin type; in the smoking rooms, over the bar, and in vestibules a lens fixture is employed.



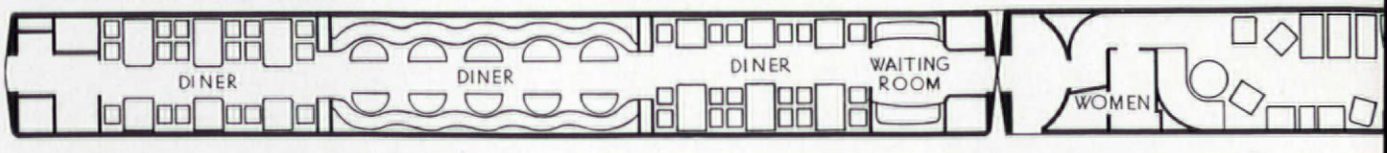


DINING CAR



WAITING ROOM *Driz Duryea*

The center section of the dining car is an innovation in seating and was introduced here as an experiment. The three sections are separated by flower cases and a further differentiation is made by the decorative treatment. The end diners, for example, are in brown walnut flexwood, with direct lighting on the tables, while the center diner is in blue and tan, with brilliant indirect lighting. The waiting room is an excellent bit of forethought. The movable furniture in the lounge car gives an air of ease and informality. A lighting strip is set over the window heads.

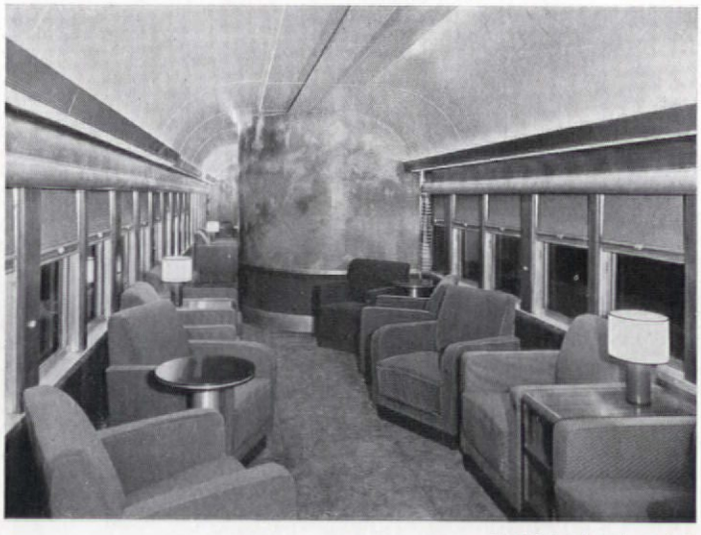


LOUNGE CAR

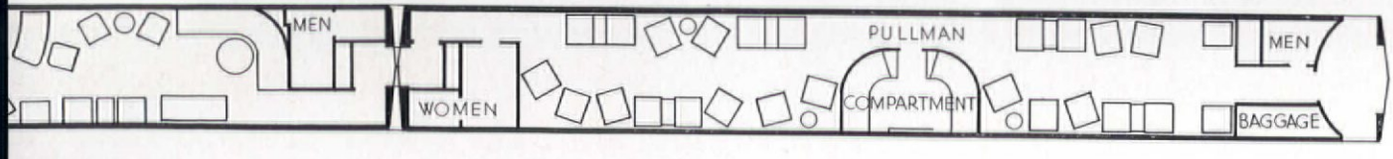


BAR

Photos, Driz Duryea

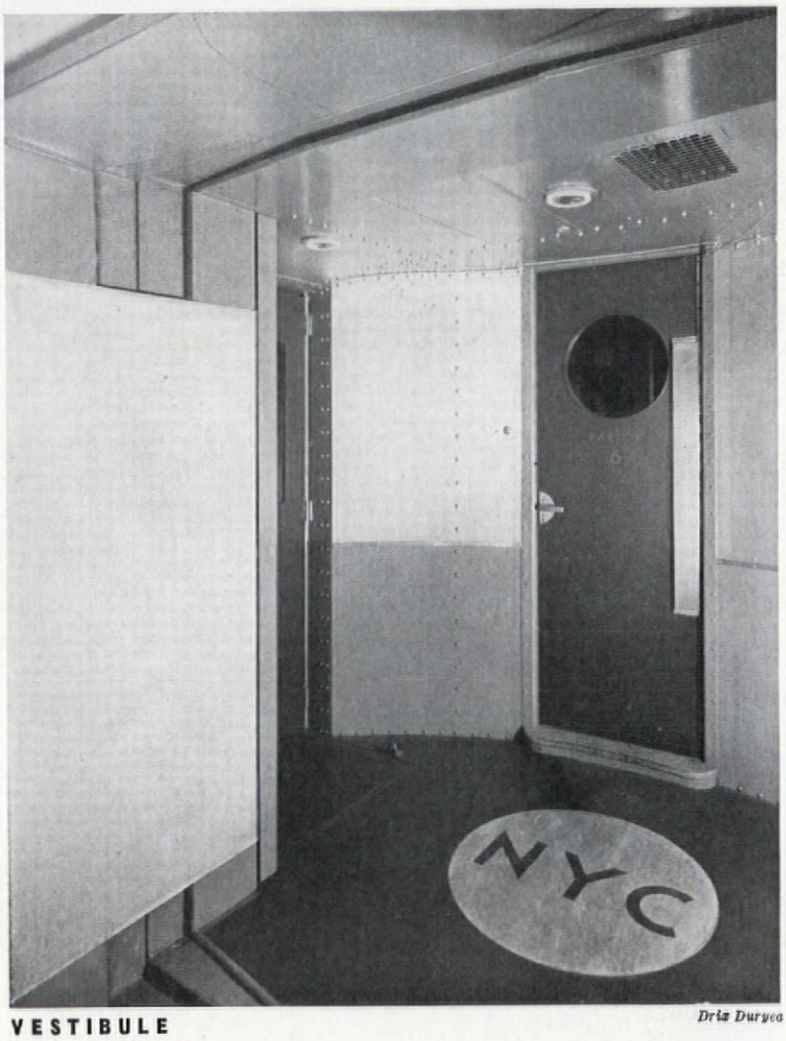


PULLMAN CAR





OBSERVATION PULLMAN



Drix Duryea

VESTIBULE

CONSTRUCTION OUTLINE

FLOORS
Kitchen and pantry only—Aluminum Co. of America. Lounge, Dining, and Parlor—cork floor, Johns-Manville, and Armstrong Cork Products Co., carpet—Mohawk Carpet Mills, carpet cushion—U. S. Rubber Co. and Midgley & Borrowdale. Coaches—rubber tile, David E. Kennedy Co.

DOORS
Interior and exterior—Jamestown Metal Corp. Fittings—locks, Dayton Mfg. Co. Door Fittings—Yale & Towne Mfg. Co.

WINDOWS AND GLASS
Sash and Fixtures—O. M. Edwards Co. Plate Glass—Libbey-Owens-Ford. Prismatic Glass—Pressed Prism Glass Company. Curtains and Fixtures—Adams & Westlake Co. and Pantasote Co. Venetian Blinds—Simon Ventilighter Co.

INTERIOR FINISH
Tekko Ceiling in Lounge—Frederick Blank & Co. Cork Wainscoting—David E. Kennedy Co. Flexwood—United States Plywood Co. Inc. Photo-Murals—Drix-Duryea, Inc. Mirrors—Semon-Bache & Co.

HARDWARE
All interior—Dayton Mfg. Co

CHAIRS AND SEATS
Coach Seats—Coach & Car Equipment Co. Covering—L. C. Chase & Co. Loose Chairs and Built-in Seats—Lincoln Chair Co. Chairs Dining Car, Coach and Smoking Room—General Fireproofing Co.

TABLES
General and fittings—Dayton Mfg. Co. Tops—Midgley & Borrowdale, Armstrong Cork Products Co. Formica Base—Haskelite Mfg. Co.

KITCHEN EQUIPMENT
Range & steam table—The Stearnes Co. Blower Fans—Kol-Ax, Inc.

BAR
Brunswick-Balke-Collender Co.

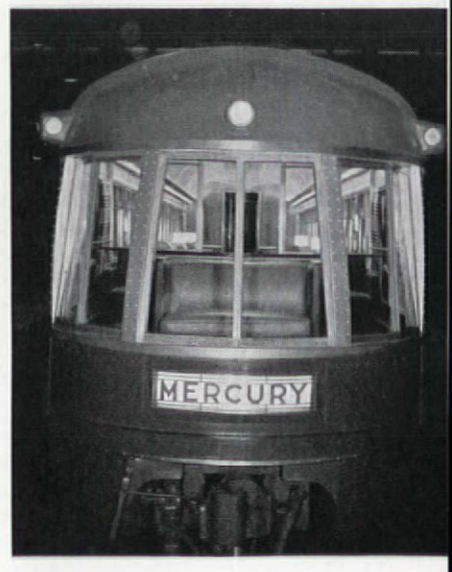
INSULATION
Walls and Ceiling—Johns-Manville, Floors and Ducts—Armstrong Cork Products Co. Steam Pipe—Unarco, Union Asbestos & Rubber Co.

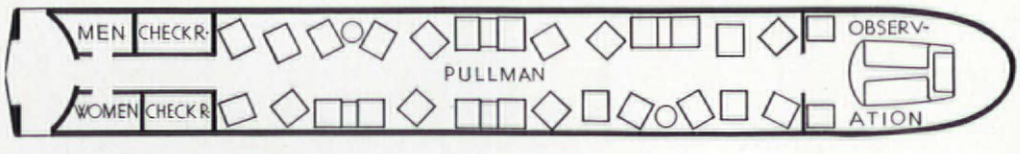
PAINT
Interior and Exterior—Sherwin-Williams Co.

LIGHTING FIXTURES
Basket Rack in Coaches—Safety Car Heating and Lighting Co. Special Fixtures, Lamps in Bath Rooms, Coaches, Lounge and End Divans—Dayton Mfg. Co. Trough fixtures in Parlor Cars, Center Ceiling Fixture in Coaches, Lights in Vestibule, Saloon, and over Bar—Luminator, Inc.

ELECTRICAL EQUIPMENT
Panel Board—Crouse-Hinds Co. Switches—General Electric Co., Harvey Hubbell, Inc. Circuit Breakers—Westinghouse. Service Outlets—General Electric Co. Marker Lights—Pyle National Co. Photo Electric Relay for Door—Stanley Works (General Electric control) Conduit Fittings—Crouse-Hinds Co. Annunciators—Stanley & Patterson.

AIR CONDITIONING
System—Frigidaire Corp. Grilles & Registers—Hart & Cooley Mfg. Co. Air Filters—American Filter Co., American Radiator Co.





HISTORIC AMERICAN BUILDINGS

HISTORIC AMERICAN BUILDINGS SURVEY

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BUILDINGS AND RESERVATIONS, BRANCH OF PLANS AND DESIGNS

NUMBER 8



AMSTEL HOUSE

NEW CASTLE, DELAWARE

The earliest known record of the house is dated 1734. There is no record of architect or builder and the date of its construction, tentatively set at 1728, has been based upon study of exterior details and paneling.

Although its plan was English, the house was constructed almost entirely of local materials, the bricks, for example, coming from New Castle itself. There is some indication that the rear wing of the house is older than the present front part. No record of any difference in dates exists, however, and the character of the work indicates that very little time elapsed before the larger house was built.

It was here that George Washington attended the wedding of Anne Van Dyke to Kensey Johns. This visit is recorded by an inscription cut on the hearthstone: "George Washington April 30, 1784." Lafayette also was among the distinguished visitors while Nicholas Van Dyke was a tenant.

The old house was renovated in March 1905 and the work was later carried on by a group of New Castle residents. Mr. Laussat R. Rogers of Totten & Rogers, Philadelphia, was the architect consulted. He found the first opening on the south side had been made into a door. This, with the third opening which had always been a door, was bricked up to form windows; various partitions which had been put up inside were taken down and the woodwork renovated. A shed in the rear on the northwest side was removed and the present room, 8 ft. 6 in. x 13 ft., added as a servant's room, with bath and hall above. This necessitated putting a doorway and steps in place of the window in the rear wall of the staircase hall and cutting a doorway from the hall adjoining the bath to the southwest bedroom. (Previously entrance to this room had been through the southeast chamber.) A modern heating system was installed, the flues being placed as inconspicuously as possible. The house, now called "Amstel House," was used as a residence by Professor Hay until 1925.

In June 1929 Amstel House became an Historical Museum. The original Colonial fireplace in the music room was restored to its original condition, the woodwork was renovated, one room in the attic was turned into an arts and crafts room, and in another glass cases were installed for costumes. The modern kitchen equipment was removed and the original fireplace which had been bricked up was opened disclosing place for a baker's oven. Since 1929 the house has been refurnished with antiques, both donated and lent. In 1931 the Brandywine Garden Club consulted Charles F. Gilette, a landscape architect from Richmond, who laid out an old-fashioned garden such as might have surrounded the house (not a restoration). In 1932 the garden was enclosed by a brick wall erected by the Colonial Dames of America (Delaware Chapter) and the Delaware Sons of Colonial Wars.

AMSTEL HOUSE

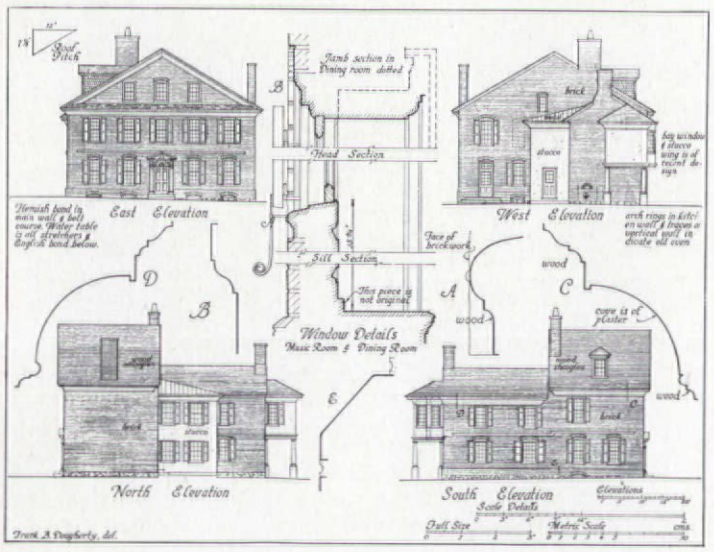
DATE OF ERECTION: 1728

OWNER: THE AMSTEL HOUSE COMMITTEE

BIBLIOGRAPHY:
Hammond, J. M., Colonial Mansions of Maryland and Delaware, pp. 247-248; White Pine Series of Architectural Monographs, 1926, Vol. XII; Faris, J. T., Historic Shrines of America, p. 205; Bennett, G. F., Early Architecture of Delaware, pp. 60-64, 176.

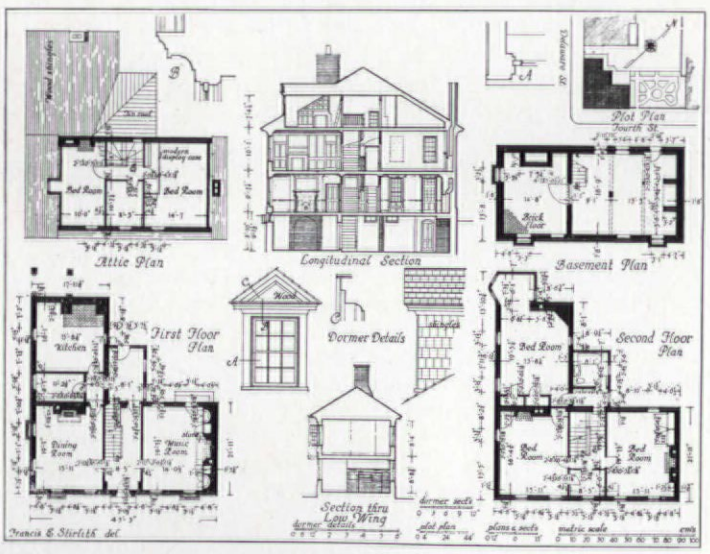


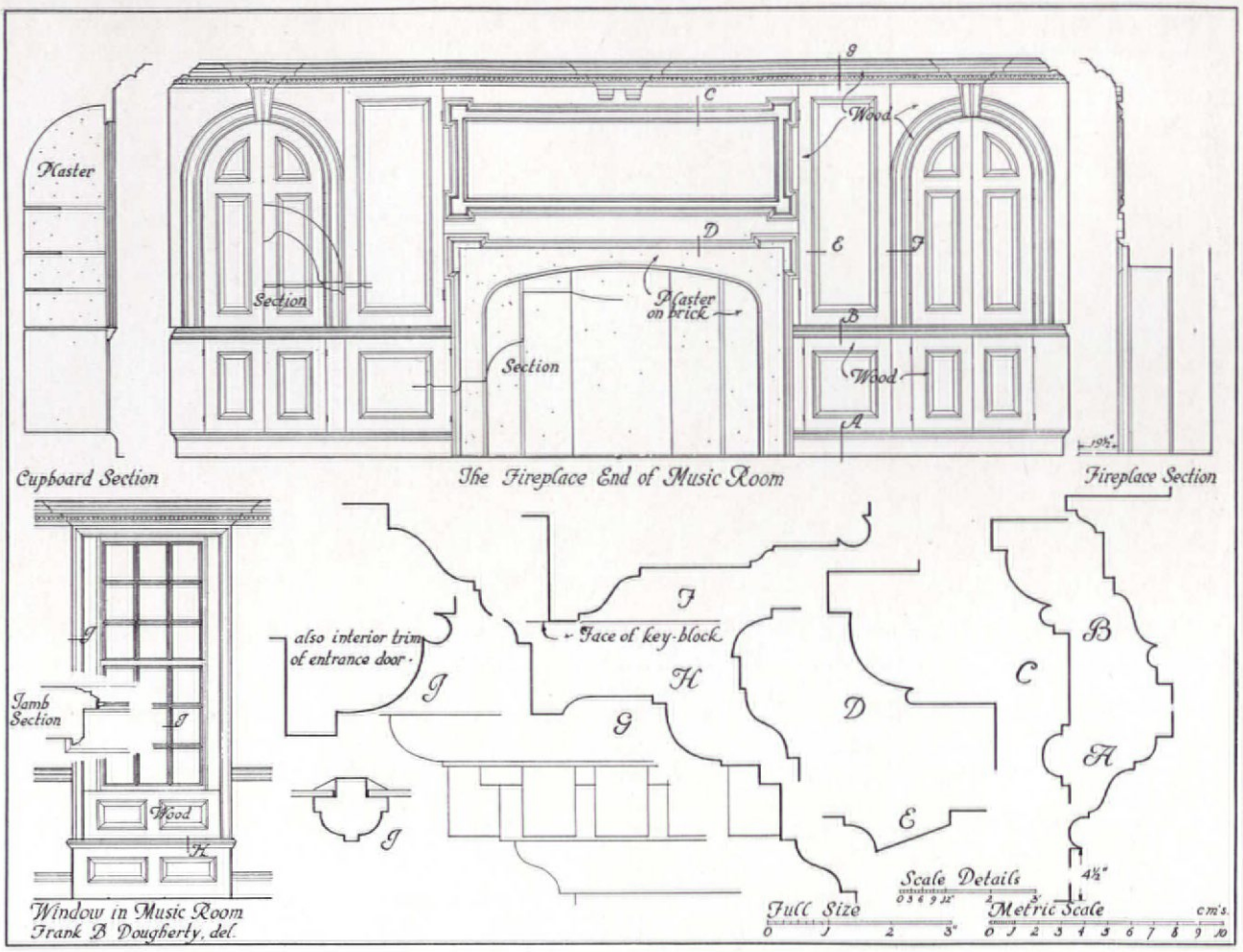
FIREPLACE IN MUSIC ROOM

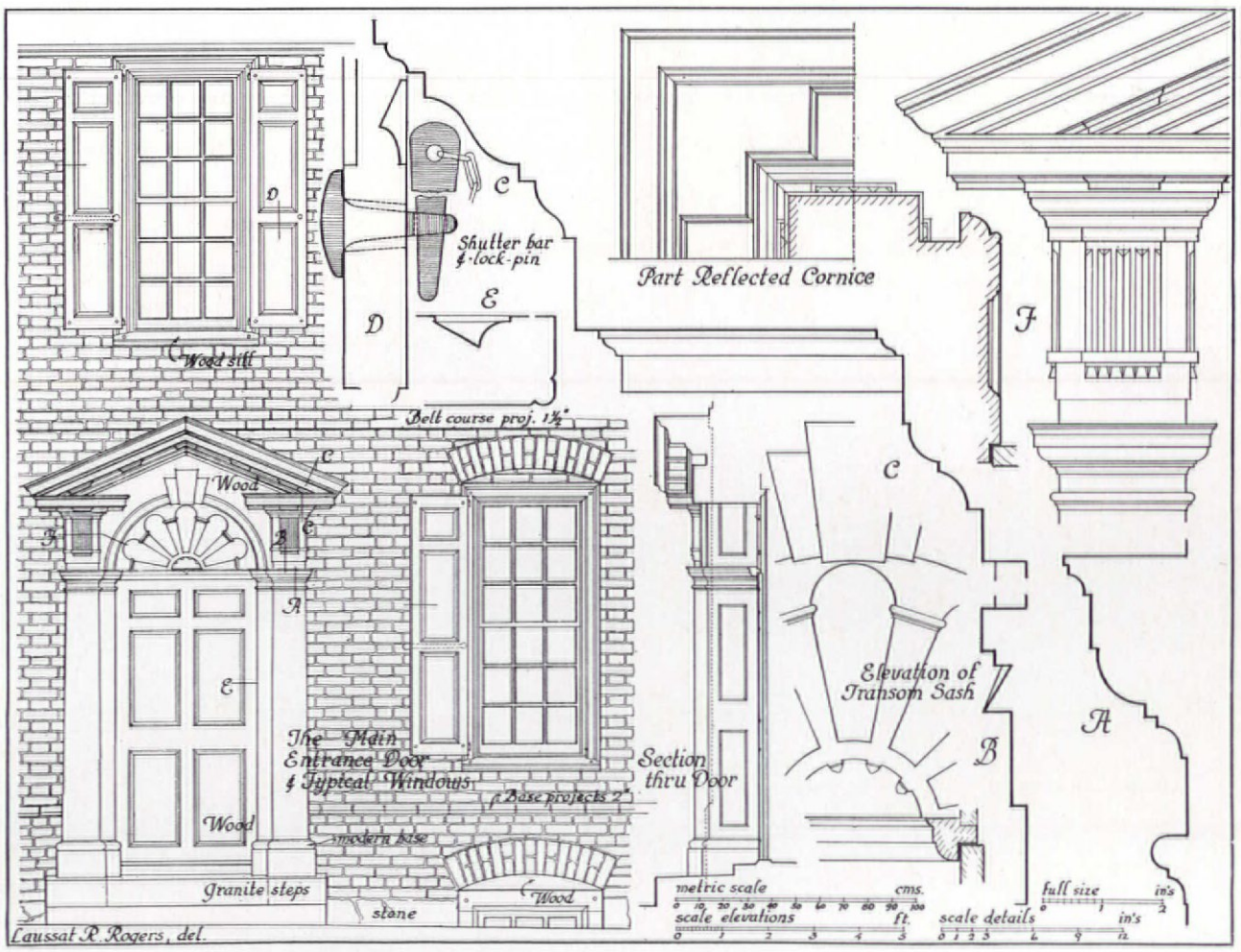


FRONT ENTRANCE






Master
Section
Section
Master on brick
Wood
Wood
Cupboard Section
The Fireplace End of Music Room
Fireplace Section
Jamb Section
Wood
Window in Music Room
Frank B Dougherty, del.
also interior trim of entrance door
Face of key-block
Scale Details
Full Size
Metric Scale
cm's.


Shutter bar & lock-pin
Wood sill
Belt course proj. 1½"
Wood
Wood
Granite steps
stone
Wood
modern base
Base projects 2"
The Main Entrance Door & Typical Windows
Laussat R. Rogers, del.
Part Reflected Cornice
Elevation of Transom Sash
Section thru Door
metric scale
scale elevations
scale details
full size
in's
ft.
cms.

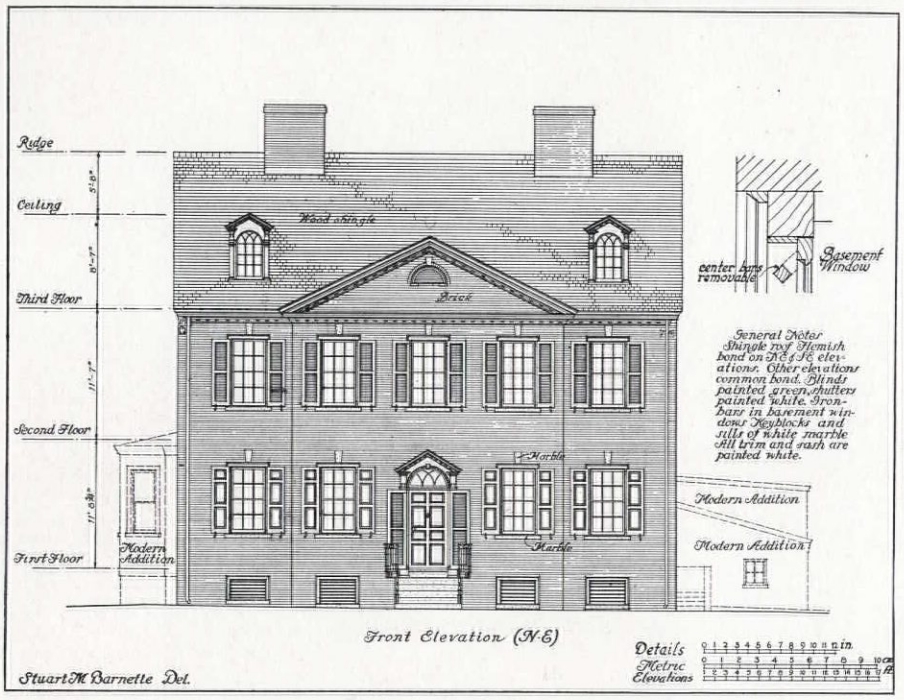


VAN DYKE HOUSE

NEW CASTLE, DELAWARE

DATE OF ERECTION: 1799

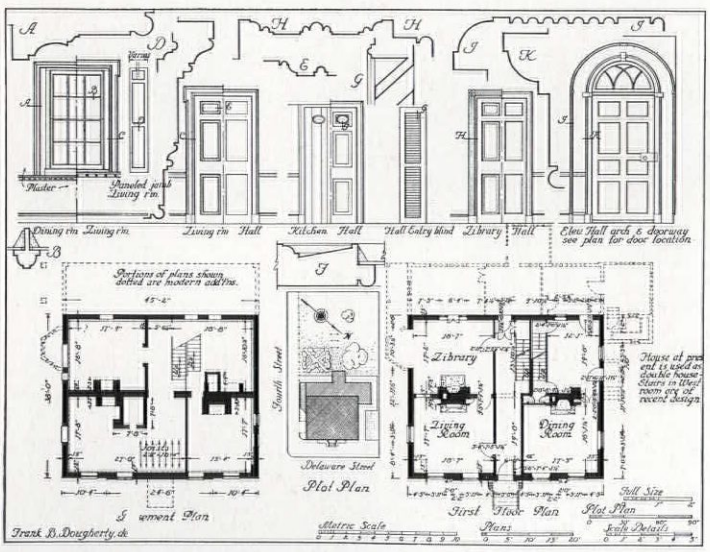
OWNERS: MR. AND MRS.
NEWLIN T. BOOTH

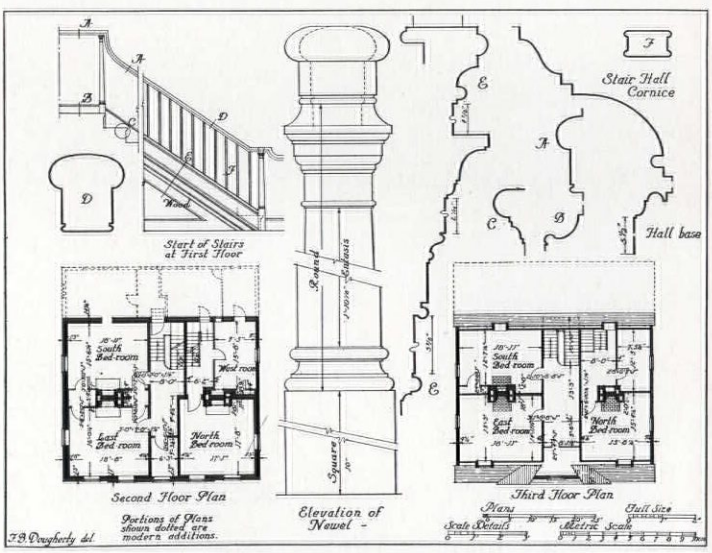


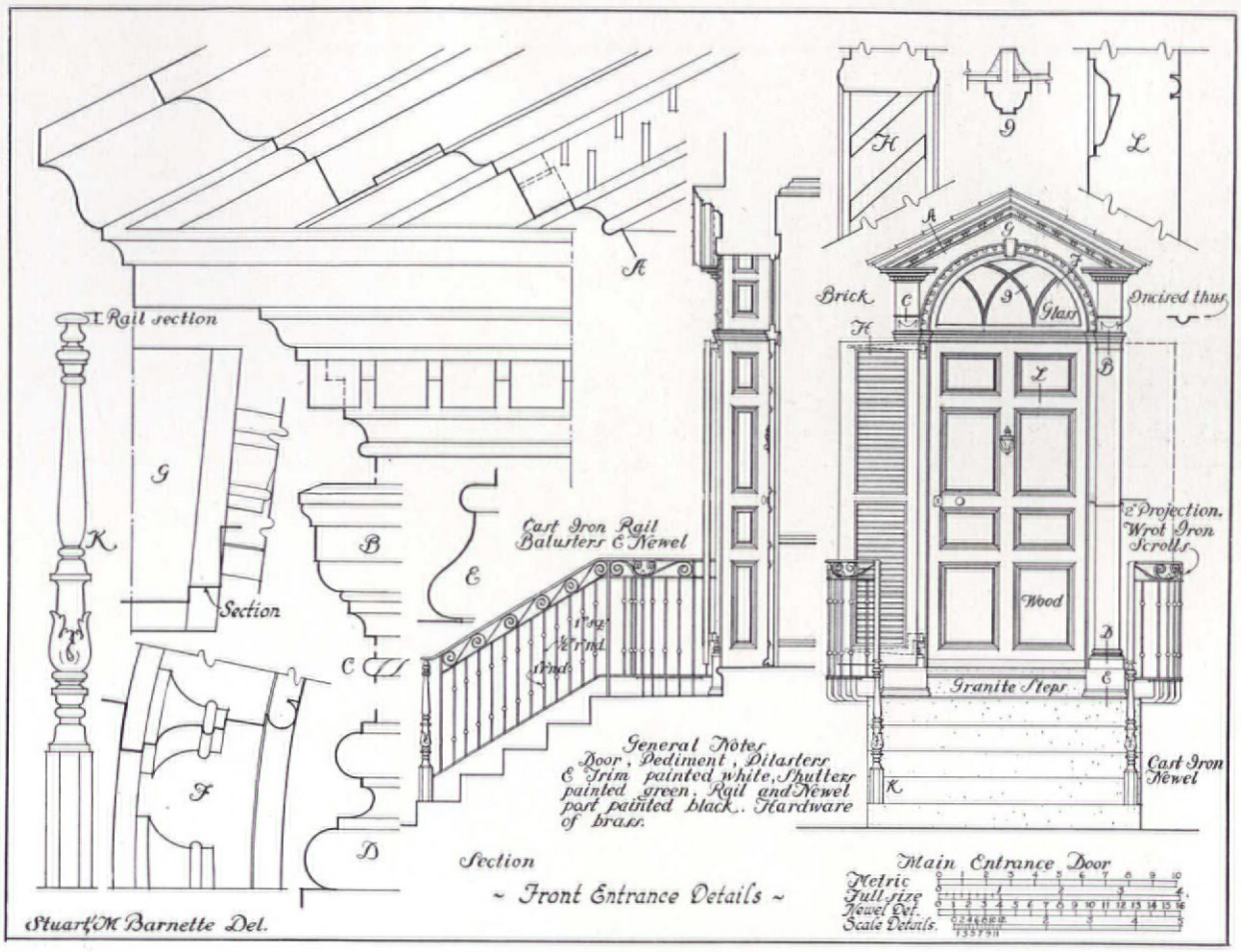
There is usually some confusion about the three houses in New Castle which are associated with the Van Dyke family. First is the Amstel House, residence of Nicholas Van Dyke, President (Governor) of Delaware from 1783 to 1786. The second and third houses were built by Nicholas Van Dyke's son, Nicholas Jr., one built 1799 for his own residence and one built about 1820 for his son, Kensey Johns Van Dyke. The former house, at 400 Delaware Street, is the more important architecturally, and important also as the home of Nicholas Van Dyke Jr. who graduated from Princeton, studied law under the Hon. Kensey Johns and attained high distinction as a lawyer. The proportions and symmetry of the Van Dyke House, its facade as well as the interior woodwork, make it worthy of note. The house is used as a double house, but the lines of the main facade and gable-ends have not been destroyed. However, an addition across the southwest facade has entirely obliterated this portion of the original house.

BIBLIOGRAPHY

Bennett, G. F., Early Architecture of Delaware, pp. 101-105, 147; White Pine Series of Architectural Monograhs, 1926, Vol. XIII, No. 1.

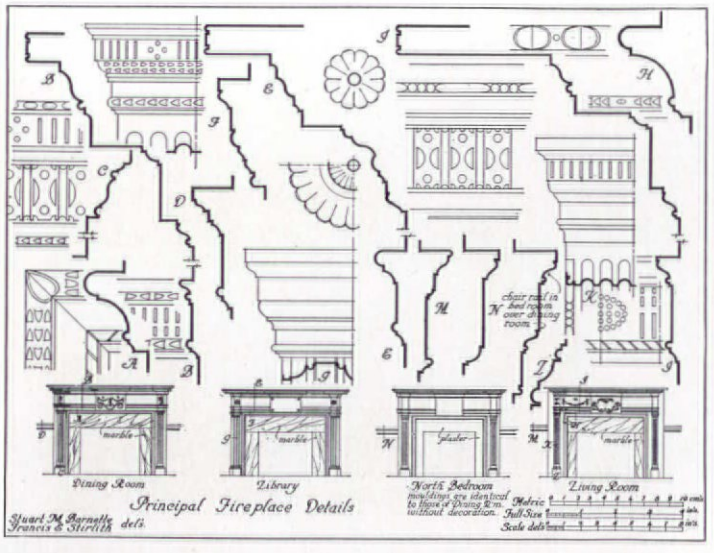




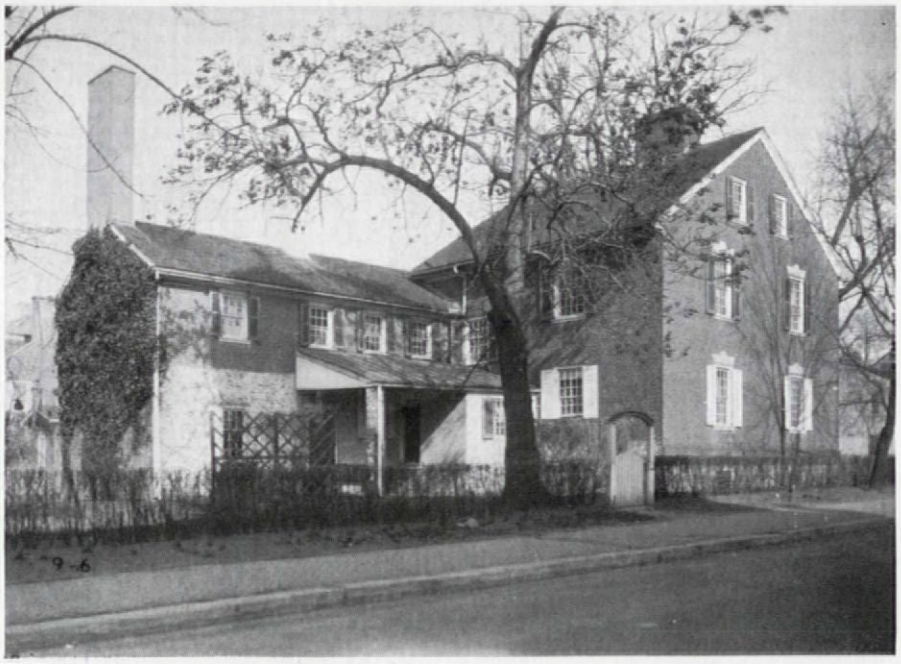


FRONT ENTRANCE









CHANCELLOR KENSEY JOHNS HOUSE

NEW CASTLE, DELAWARE

DATE OF ERECTION: 1790

OWNER: DR. LEWIS BOOKER

BUILDERS: GEORGE VAN SANDT AND JOSEPH BALDWIN

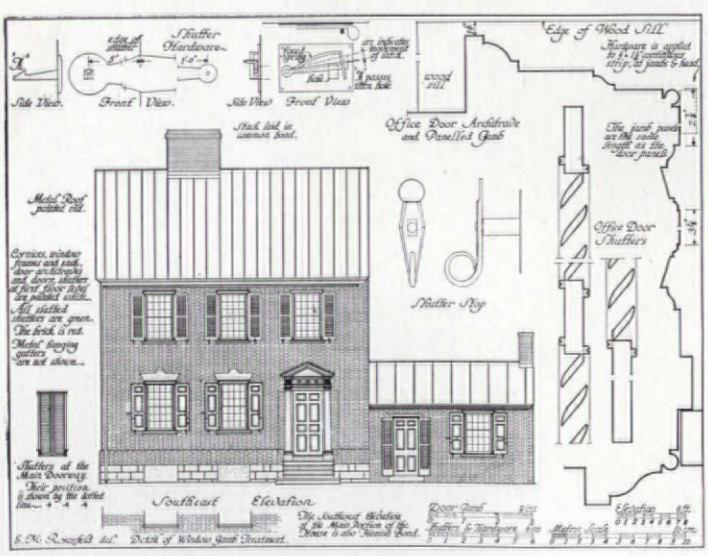
This house was built in 1790 by George Van Sandt and Joseph Baldwin, local craftsmen, for Chancellor Kensey Johns at the cost of "£945 16s 5d." The turned banisters and newel posts were made by Sampson Barnette while Garrett Lawrence provided the marble fireplace pieces, the steps, platforms and plinths. This information we find in the itemized bills and terms of agreement now held by the present owner.

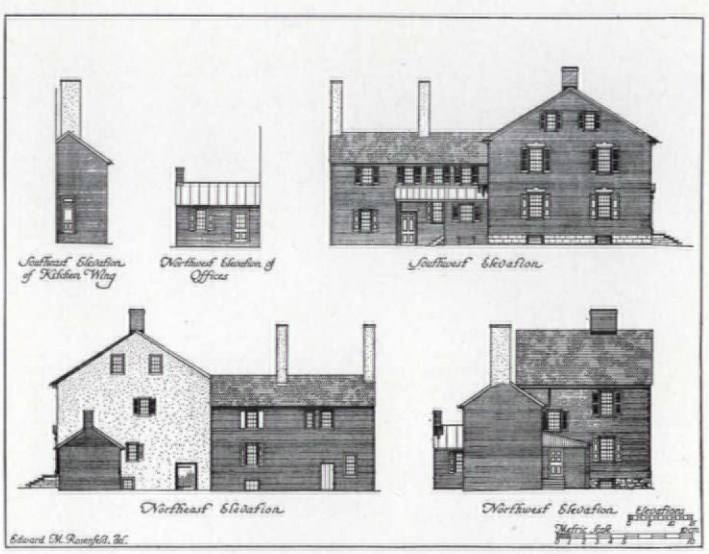
The Johns house descended to Kensey Johns' daughter Nancy, then by inheritance to the Misses Nancy and Fidelia Stockton, then to their niece, Miss Elizabeth Moore, who rented it from 1913-1924 to Dr. Lewis Booker. He purchased it in 1924 and is the present occupant.

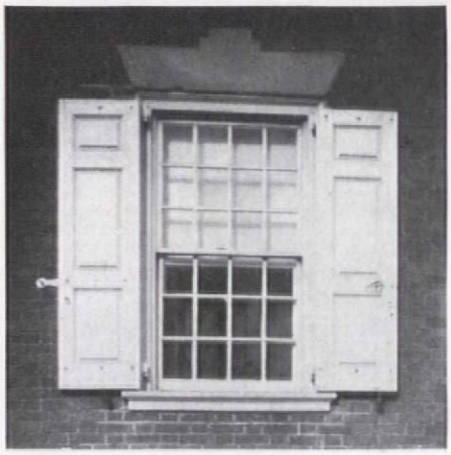
The house is in excellent condition and contains the original brass latches and key plates except for two, which, when found to match those at Mt. Vernon, were given to Mt. Vernon when it was restored in 1910. Measured drawings of parts of this house are published in the White Pine Series of Architectural Monographs, Vol. 12 No. 1, and George F. Bennett's Early Architecture of Delaware, Historical Press, 1932.

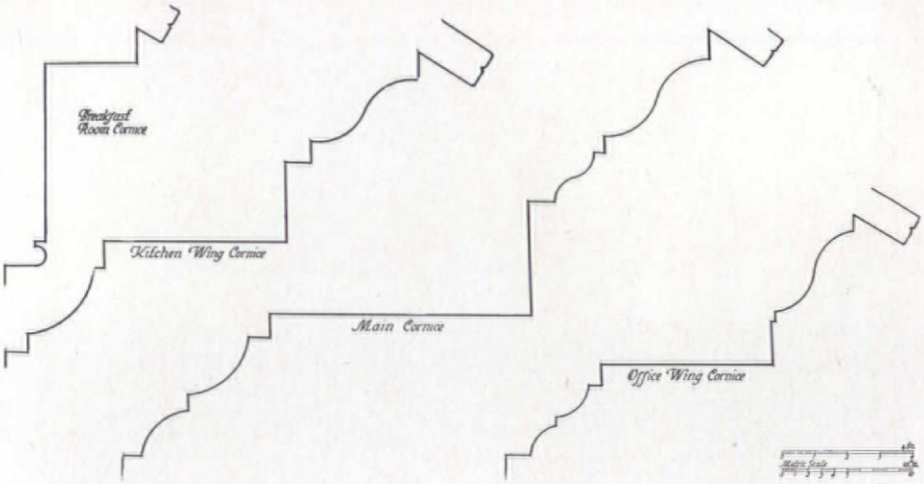
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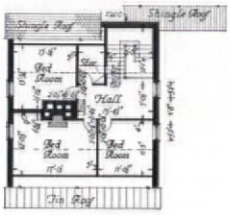
Hammond, J. M., Colonial Mansions of Maryland and Delaware, p.255, and illustration; Bennett, G. F., Early Architecture of Delaware, pp. 95-98, 188-191; White Pine Series of Architectural Monographs, 1926, No. XII.
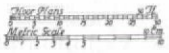








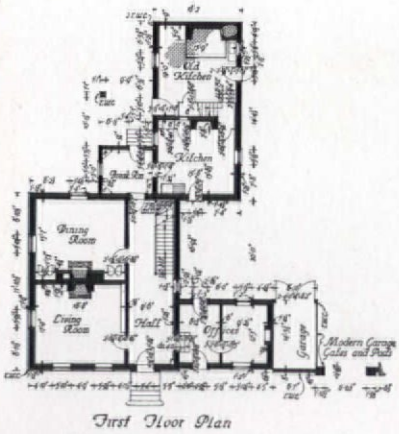


Third Floor Plan

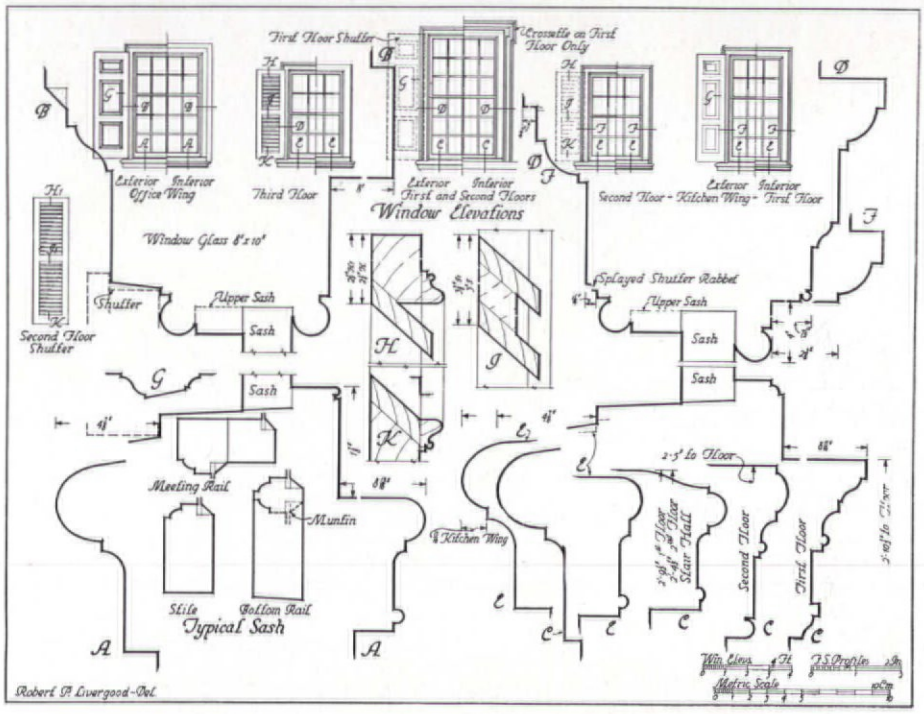


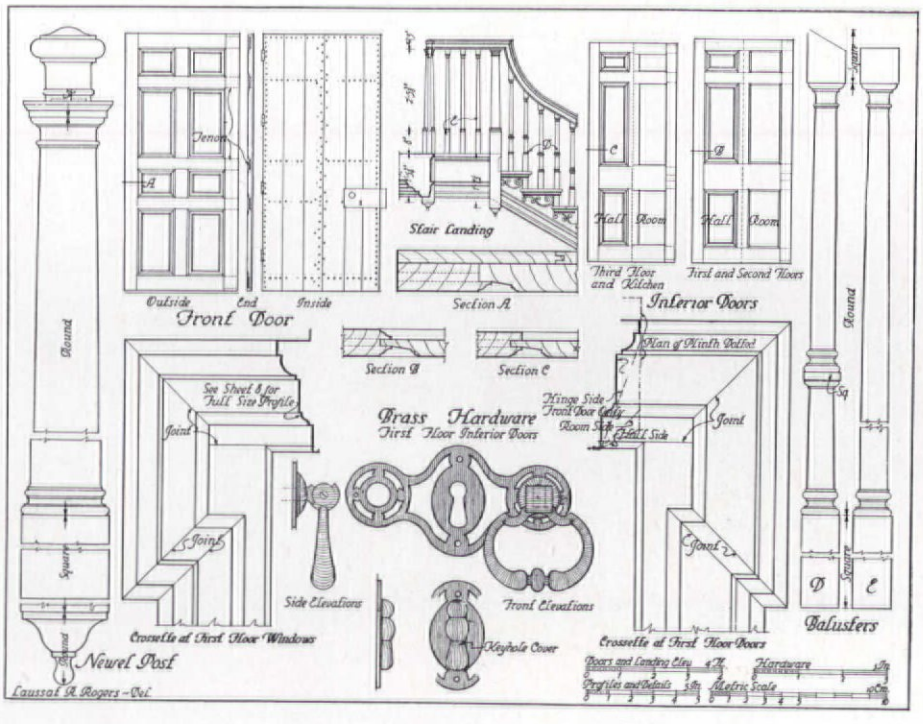
Second Floor Plan





First Floor Plan

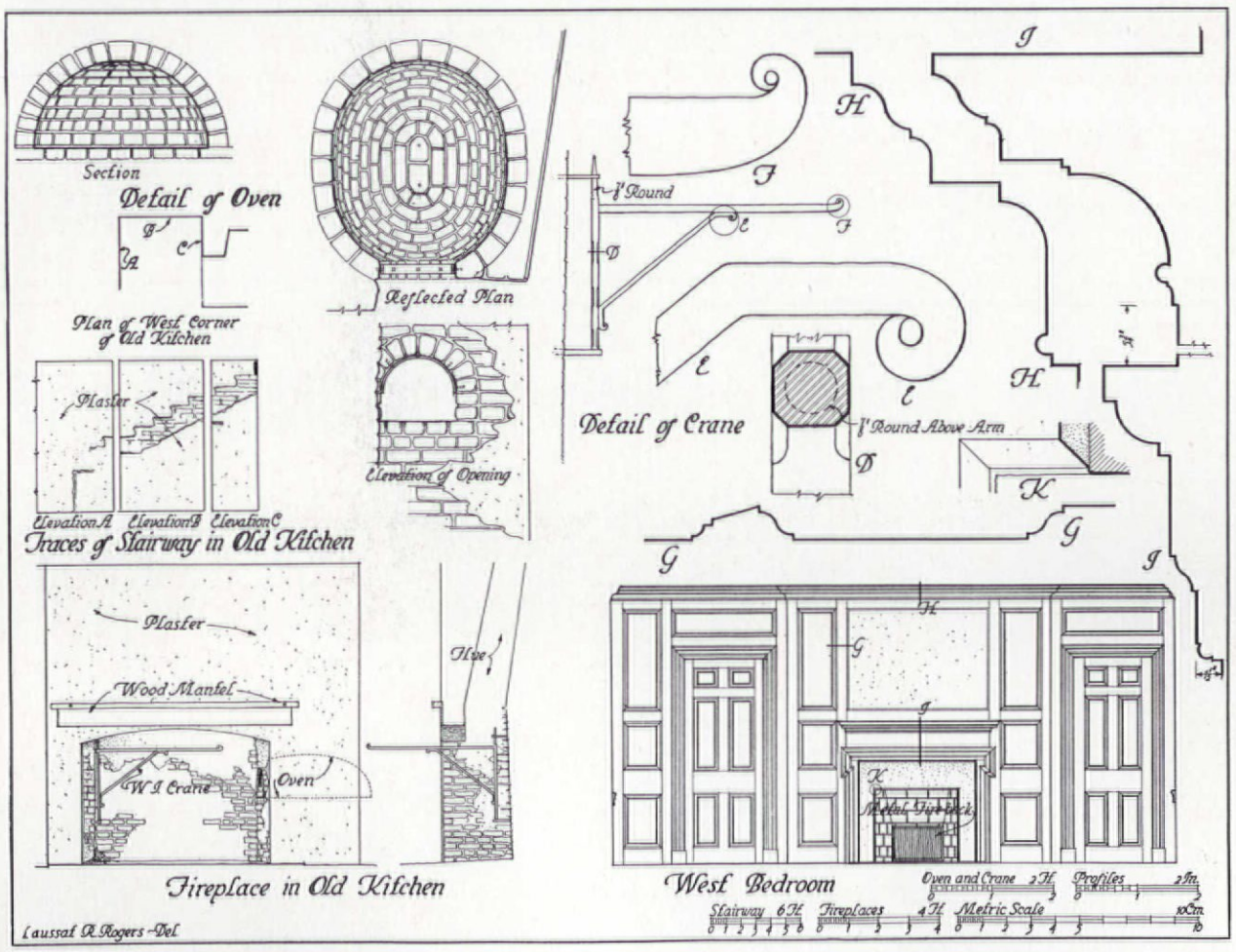




CHANCELLOR KENSEY JOHNS HOUSE



SECOND FLOOR BEDROOM



FROM RENT TO SPACE

PART III.

BY BERNARD J. HARRISON, JR., HENRY D. WHITNEY, CHLOETHIEL WOODARD

THE PROBLEM

1 TENANTS' HOUSING NEEDS
Analyze the tenants' needs, translate them into a planning program, and establish the rent they can pay.

2 FINANCIAL TESTS
Find out the amount of space the fixed rental will support and judge it by comparison with 1. Establish the land value which the rental will allow.

COMPROMISE 1

3 SITE SELECTION
Find a site that fulfills the requirements set in 1 and 2.

COMPROMISE 2

THE SOLUTION

4 THE BUILDING DESIGN
Study the housing vocabulary of common planning factors. Within the price limits set in 2, form the building units. Analyze their first cost and costs of use. Judge the quality of the accommodations in comparison with program in 1.

COMPROMISE 3

5 SITE PLAN
Study the site vocabulary of common planning factors. Within the price limit set in 2, plan the site. Analyze all first costs and costs of use. Check the quality of the site plan in comparison with the program in 1.

COMPROMISE 4

6 PROJECT SUMMARY
Set up a total project cost estimate and make a final financial set-up.

The first four steps in this technique of APARTMENT PLANNING were the subject of the articles which appeared in the June and July issues. Step 1 showed an analysis of the tenants' housing needs, a planning program derived therefrom, and fixed the rental tenants could afford to pay.

Step 2 by a series of financial tests checked the feasibility of the planning program against the determined rent and indicated points of compromise. The allowable cost and approximate amount of space which could be supported by the rent was thus ascertained. In addition, Step 2 pointed out the means of determining a justifiable land value.

Step 3 dealt with the selection of a site which would fulfill the requirements of the program and would fall within the allowable price established in Step 2.

In either Step 2 or 3 necessary modifications in the original program were made if justifiable. At this point the problem was completely formulated and tested, and if it seemed feasible the next Step was the solution.

Step 4, the first part of the solution, dealt with the design of the buildings. Within the limits defined in Steps 1 to 3 various building types were developed. These plans were compared and checked by a more rigorous analysis for desirability and cost. The BEST OF THE PLANS falling within the allowable cost limit established in Step 2 were then selected.

SITE PLAN 5

With several well-planned and economical building units developed, the next stage is to arrange them on a specific site in such a way that a desirable plan results. This means a plan so disposed that space around a building does not adversely effect the quality of the living space within the building. Considerations of light, air and privacy and good orientation to sun, wind and views are the most important factors that condition the grouping of buildings. In addition, the plan must provide the necessary exterior space for playgrounds, schools, shopping centers, etc., and finally it must relate the dwellings and the various accessory buildings into a convenient, efficient, and well-composed whole.

As in the study of the building units, the development costs of the site must fall within the limits established in Step 2. These costs include pavements, utilities, landscaping, etc. Each step in planning the site is analyzed for quality and costs.

COMPROMISE 4

A final compromise may be necessary at this stage of the solution. The exigencies of the site may be such that some type of building unit other than those selected under Step 4 will have to be used. These units may be less desirable in accommodations or slightly more expensive than the allowable limit. In the latter case, the improvement costs of the site will have to be cut to allow for the corresponding increase in building costs. In making the choice between several possible site plans the development costs of a desirable plan may be excessive and force the selection of an inferior solution. In any case, a knowledge of the relative costs of various schemes is invaluable if an intelligent choice between them is to be made. This article presents a method for analyzing various layouts for their comparative quality and costs.

COMMON PLANNING FACTORS

The same type of studies as those illustrated under the building design may be made for site planning. In this case, they would take the form of studies for orientation to sun, prevailing winds, daylight, etc.; adaptability of different building shapes to special conditions of topography or orientation; and the method of combining building units into groups and their effect on each other in combination.

This type of material may be built up at the same time the planner is studying a single project. The following brief examples of a planning vocabulary are not offered as a presentation of data. Certain data have been included so that the method may be illustrated more easily. The intention is merely to assist the planner in the preparation of his own Housing Design Manual by showing the type of material that would be included.

PLANNING THE SITE

In designing the buildings the *room* was the most important consideration. Building units were developed in relation to it. In designing the site the effect of external space on the room and the apartment is still the primary consideration. The problem of site planning then becomes one of arranging buildings satisfactorily in relation to each other as well as to sun, wind, views and other factors which affect the rooms. A specific site should be studied under three headings: (1) The relation of external to internal space. (2) External spatial requirements. (3) The functional arrangement of the site.

RELATION OF EXTERNAL TO INTERNAL SPACE.

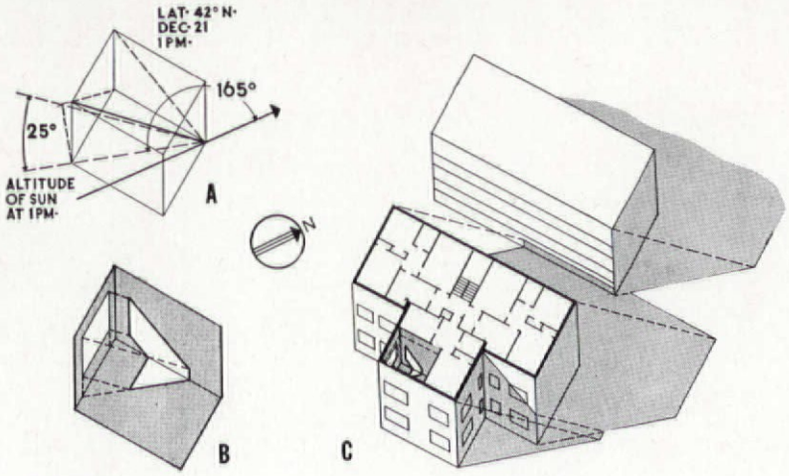


FIGURE 1.

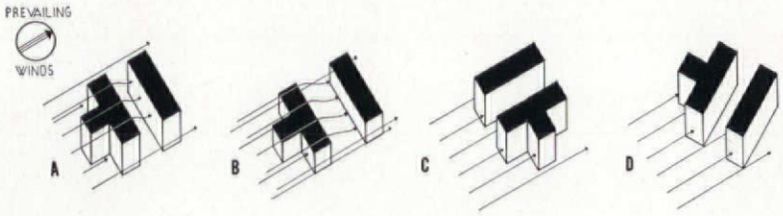


FIGURE 2.

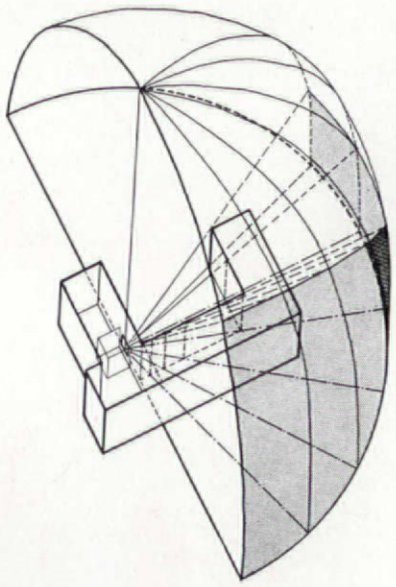


FIGURE 3.

ORIENTATION TO SUNLIGHT.

The diagrams illustrate the method of studying sunlight in rooms and on buildings for a specific hour and date. Shadows and sunlight penetration over the days throughout the year can be determined in this way. In computing shadows from the sun, it is necessary to know two components—the height of the sun above the horizon and its distance east or west of the north-south line. These angles can be found in the American Nautical Almanac from tables for a specific latitude, date and hour. These are plotted as shown in A. (Figure 1). The ray in plan, elevation, and section is thus found as well as the true ray. Shadows are then cast in the conventional manner, as shown in B. and C.

ORIENTATION TO PREVAILING WINDS.

At A. (Figure 2) the wind is blocked from the second building by the height and proximity of the first. Some eddying effect is undoubtedly present but not sufficient to carry the breeze far down the face of the rear building. At B. lower buildings and wider spacing allow the rear building full benefit of the air current. In both of these cases, the apartment in the projecting wing of Building 1 does not have as good ventilation as the other apartments which have two opposite exposures. At C. only the projecting wing gets good through draft. At D. buildings are turned to allow an equal amount of the prevailing wind to reach all apartments.

ORIENTATION TO VIEW.

If there are preferential views from the site, the maximum number of the principal rooms should face this view. Rooms at right angles to a view receive little benefit from it except in the portion of the room immediately adjacent to the window. On sloping sites it is pleasanter to look down hill or along the slope than up into it and major rooms should be arranged accordingly.

DAYLIGHT.

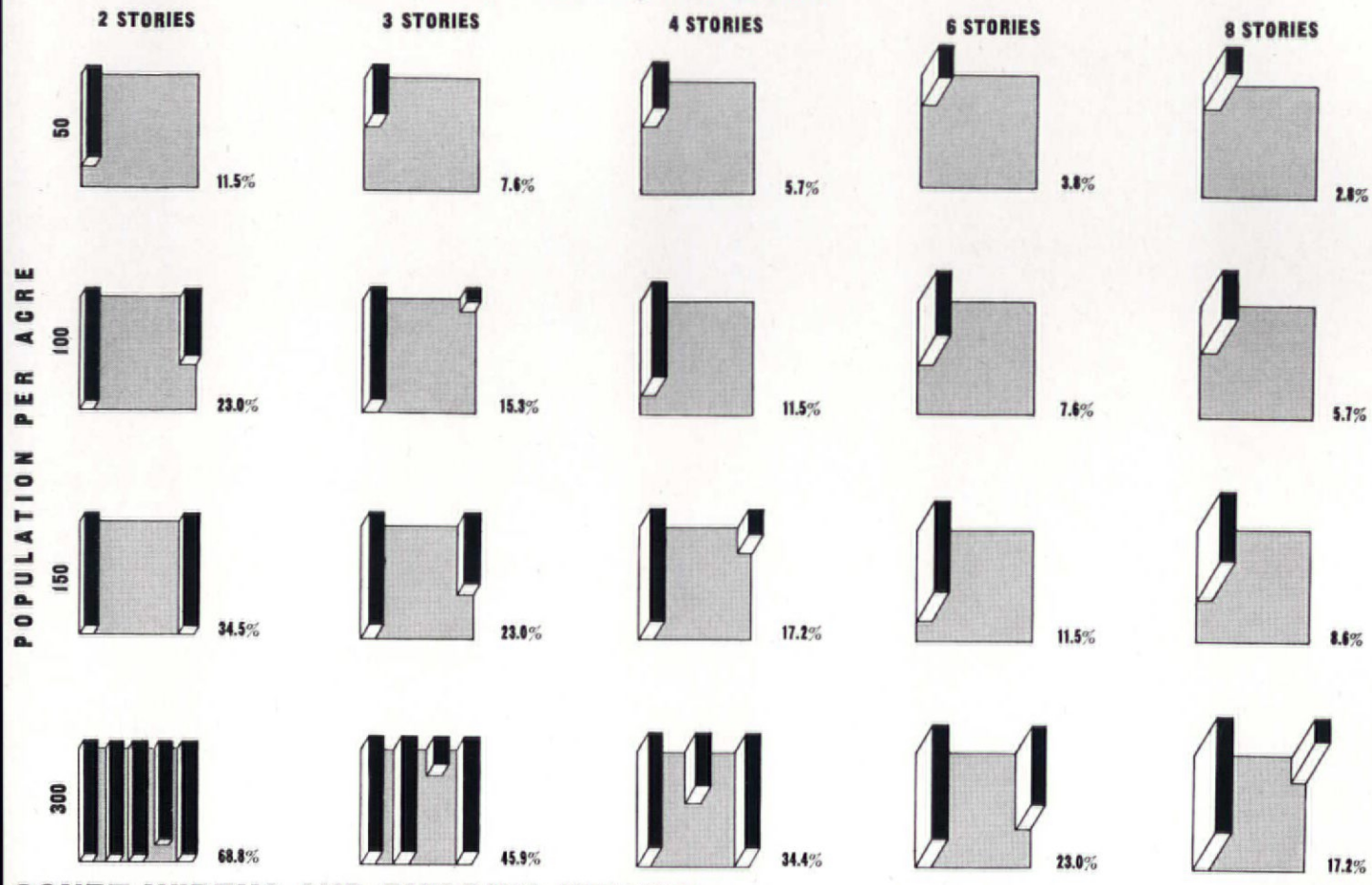
The term daylight is used as distinct from sunlight. Daylight is important as a supplement to sunlight as it has some therapeutic value. The intensity of daylight can be gauged by a light meter. The maximum daylight possible from a given window on a flat plane is a half dome. The diagram (Figure 3) indicates the amount of daylight which is received by a window located near an inside corner of the building and faced by a projecting wing. The amount of daylight at the plane of the window is nearly directly proportional to the area of the sky visible, irrespective of compass direction, although the intensity is somewhat greater at an angle of about 30 degrees to the horizon. In the diagram sight lines are drawn from a point at the window through points along the adjacent and opposite walls. These sight lines intersect the half dome of the sky and indicate the portion which is invisible from the window. This portion has been shaded in the diagram.

PRIVACY.

Windows of principal rooms should not be located in such a way that they may easily be looked into from outside the apartment. This frequently occurs at right angle interior corners or across narrow courts. Rooms on the first floor should not be easily visible from exterior public circulation. Noise, too, is frequently annoying in rooms so located.

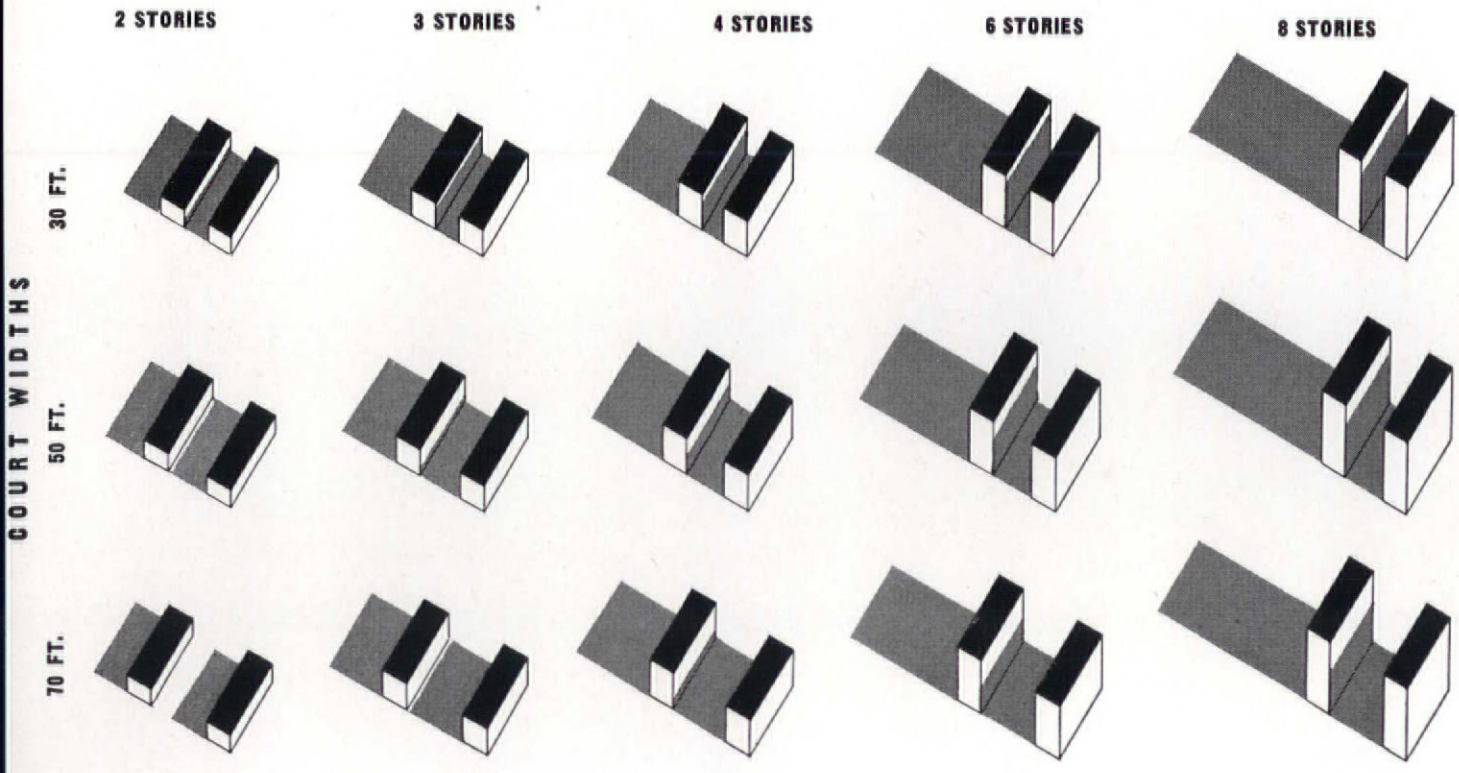
POPULATION DENSITY IN RELATION TO HEIGHT AND COVERAGE

It is often difficult to visualize the relation between density, building height, and coverage. The chart below will be of assistance in translating population density figures into an understanding of what they mean on a site.



COURT WIDTHS AND BUILDING HEIGHTS

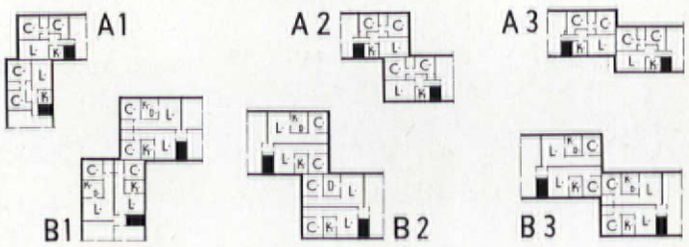
The chart below presents court widths in relation to building heights. Shadows are cast for 12 noon, Dec. 21, Lat. 42 N. with buildings facing due south. Such studies aid in establishing minimum court widths in relation to sun, but daylight and noise are other factors which should also be considered.



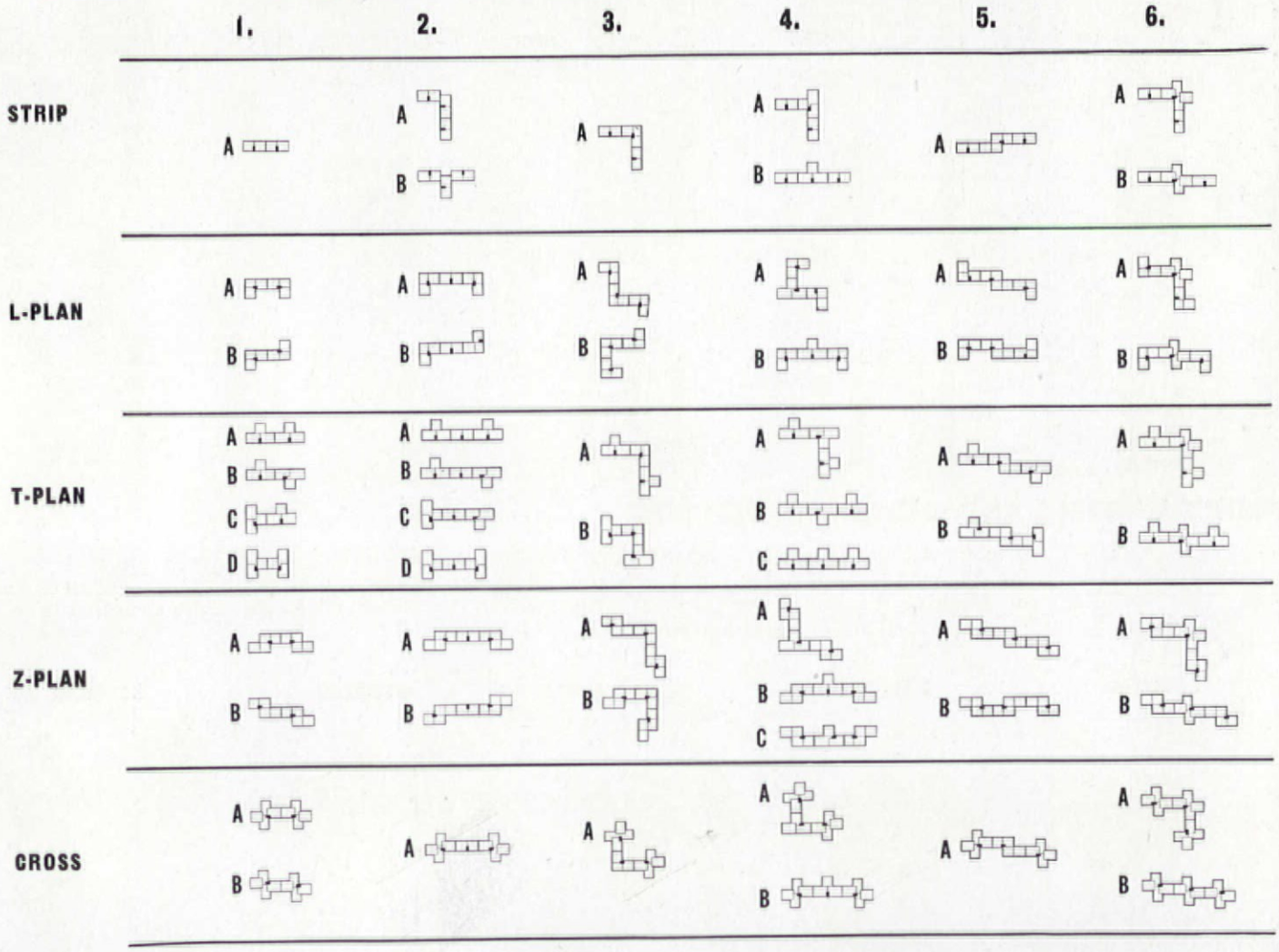
COMBINING BUILDING TYPES

The nucleus of a site plan is one building unit; this must be combined with other units to form a complete plan. The manner of joining and the types of units which are joined have a vital bearing on the space inside the building. Certain combinations are superior to others, and some should be avoided entirely. The characteristics of the five basic building shapes have already been discussed in Step 4. Familiarity with the characteristics of the various groupings of building types shown below is of great assistance to the site planner.

METHODS OF JOINING UNITS



The groupings included in the large table below show only the normal method of joining units—with party walls completely attached. The diagram opposite, however, illustrates methods of joining buildings in special cases—for example, turning a corner with Strip units (at A1) or making a shorter straight run of buildings (at A2). Series B illustrates types of connections necessary to secure two exposures in a wing containing two apartments which if connected normally would lack ventilation and light in some rooms.



1. TWO LIKE UNITS JOINED TOGETHER
The straight Strip offers uniform orientation, good light, privacy and ventilation. Certain combinations of other like units form small courts with cross views between projecting wings but this can be avoided or improved by turning one of the units.

2. TWO LIKE UNITS AND STRIP
Strip A shows method of turning corner with three strips. Strip B shows formation of T-unit with three Strips. Possible objection is small court formed in middle. All others illustrate the advantage of using a Strip to separate units with projecting wings.

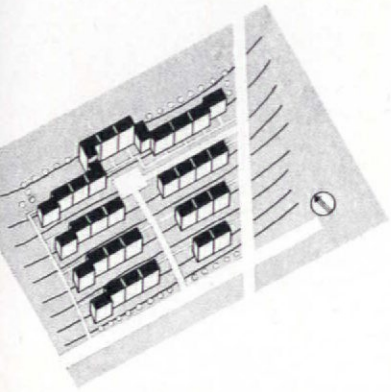
3. TWO LIKE UNITS AND L-PLAN
The L is used principally in combination with other units for turning corners. Uniform orientation is impossible for all apartments. Projecting wings should be turned away from inside angle as at L-A, T-A, Z-A to avoid closed courts otherwise formed as at L-B, T-B, Z-B, Cross-A.

4. TWO LIKE UNITS AND T-PLAN
The T is used for turning corners with other units and for straight runs. At corners when combined with other units with projecting wings, it has the disadvantage of forming courts as at T-A, Z-A, Cross-A. When used in straight runs the projecting wing should be kept out of small courts as at T-B, Z-B, L-B.

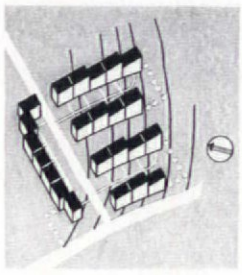
5. TWO LIKE UNITS AND Z-PLAN
AZ can be used in much the same way as a Strip to separate buildings with projecting wings as at L-A, T-A, Cross-A or in combination with itself if straight runs are desired. This forms courts, as at Z-B, but when used diagonally, as at Z-A, these are avoided.

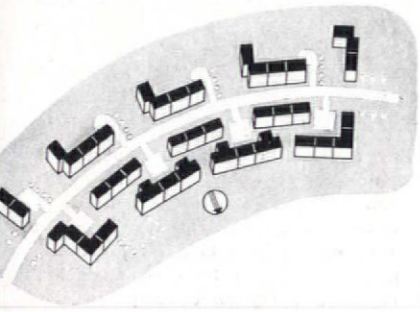
6. TWO LIKE UNITS AND CROSS
A Cross-unit can be used as a corner unit or as a connecting link in straight runs. It has the disadvantage of creating unavoidable courts. Strips, T's, or Z's are best used flanking Crosses at corners so that courts are formed on only one side. These courts should always be towards the exterior angle as at Strip-A, T-A, Z-A. Cross-plans are not desirable when used exclusively, or with other units which have projecting wings.

TYPICAL BUILDING GROUPINGS

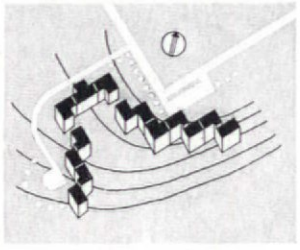


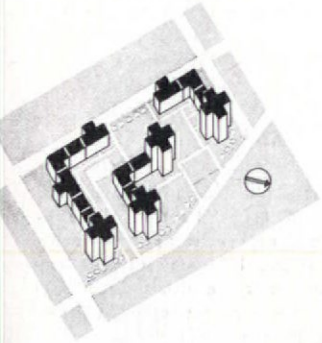
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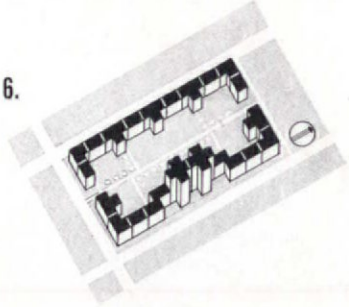


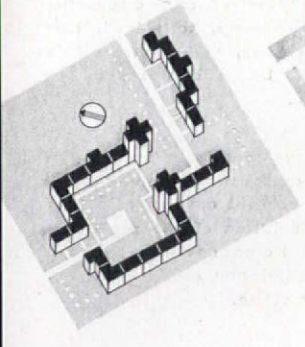
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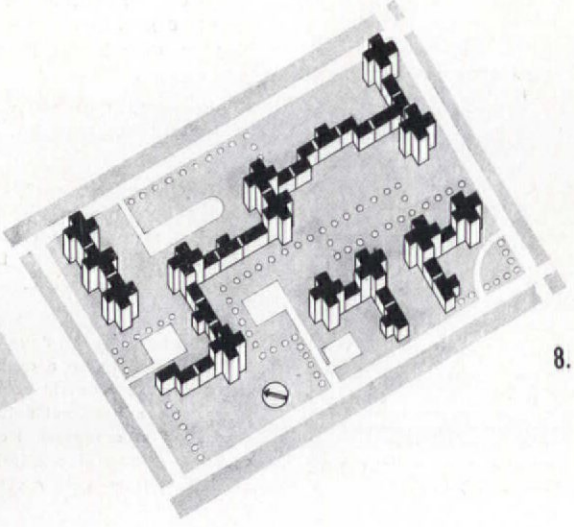




6.







8.

1. A simple strip arrangement on a sloping terrain. These units may be oriented uniformly and when placed parallel to the contours are easily adaptable to a slope. The strip is probably the ideal type of unit for uniformly good accommodations.

2. Another example of a strip organization. In this case units step longitudinally down the contours. Excavation is greater than in example 1 but it is possible to get additional apartments above grade at the lower ends of buildings. Units face southeast and southwest to derive approximately equal orientation to sunlight.

3. A Strip, L, and T organization. The majority of buildings are oriented south, presumably towards an extensive view. Narrow courts are avoided by separating T's with strip units.

4. Z's and L's are most commonly used on a sloping site. The Z unit drops a half story at the stair joining the two wings and thus naturally adapts itself to a sloping terrain. L's are used merely to change the direction of the Z's. This plan has the effect of opening out towards the view. For sunlight orientation, few shadows are cast and each side will receive either morning or afternoon sun.

5. Strips, L's, T's and Crosses are used in a tighter block organization. All projecting wings are kept apart by strip units or are placed towards the exterior angle at corners. The 6 story cross units are placed towards the north so as not to cast shadows on lower buildings. Courts usually formed by crosses are avoided by placing them at the ends of straight runs. Incinerators in the lower buildings are not possible in plans of this sort due to the presence of apartments on higher floors.

6. A perimeter plan formed from all five unit shapes. The western portion of the block is far better than the eastern as restricted courts are avoided.

7. All five units are utilized again. In this, courts are avoided by separating Z's with a T, placing Crosses at the end of straight runs and using strips frequently. Buildings are arranged to get an equal amount of sunlight in the majority of apartments.

8. To get a low coverage, many buildings have been made 6 stories. This presents difficulties at many points such as the separation of two 6 story Crosses by a 3 story Strip, forming cross views over the roof of the lower buildings. Unpleasant courts are also formed by the Crosses placed in a row. In such a case, a higher coverage and simpler unit shapes would probably provide better accommodations.

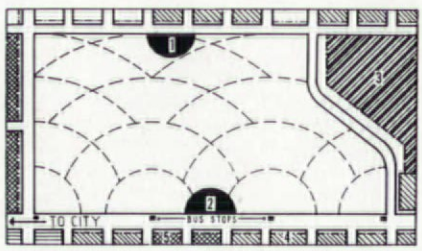
FUNCTIONAL ARRANGEMENT OF THE SITE

Type site plans cannot be built up and used with as little modification as type building plans. While the activities carried on within the apartment will not vary greatly among families, and since special requirements may be easily incorporated, the location of buildings on a specific site presents a more complex problem. Each site has its own peculiarities which call for special solutions and the number and kinds of accessory buildings and the common playgrounds, etc., will vary greatly in different localities.

The foregoing types of study will facilitate the planning of a specific site. A **METHOD OF SITE PLANNING,** such as that outlined below, while not a guarantee of a satisfactory solution, serves as a check against incomplete solutions. If diagrams analyzing all major elements of the problem are made, the final plans may be laid over each diagram and checked.

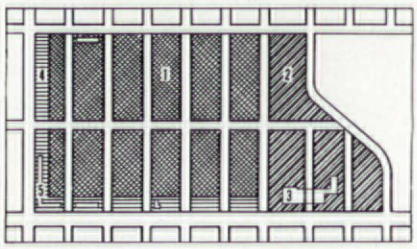
The primary advantage of such studies as those below is that they emphasize factors which may be easily overlooked.

1



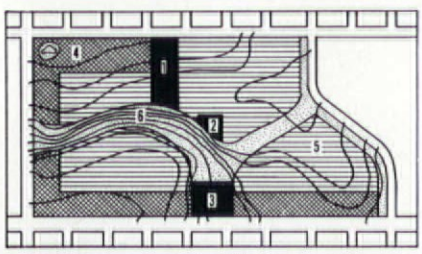
1. SCHOOL 2. SHOPS 3. INDUSTRY 4. & 5. RESIDENTIAL

2



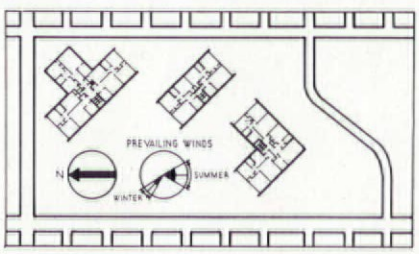
1. RESIDENTIAL 2. INDUSTRY 3. ABANDONED FACTORY 4. STORES

3

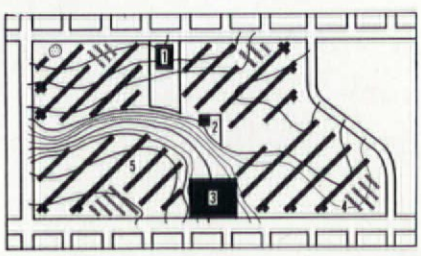


1. SCHOOL 2. COMMUNITY CENTER 3. STORES 4. THREE STORIES 5. TWO STORIES 6. PARK

4

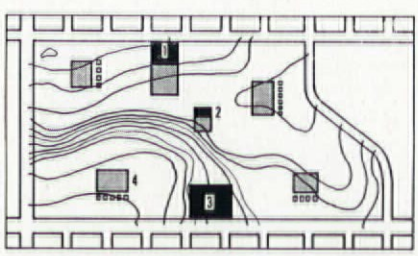


5



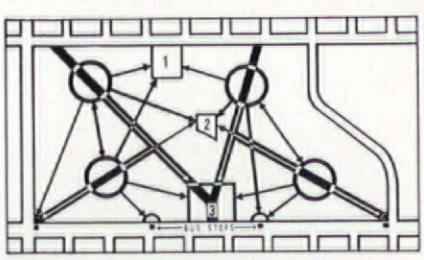
1. SCHOOL 2. COMMUNITY CENTER 3. STORES 4. GARAGES 5. APARTMENTS

6



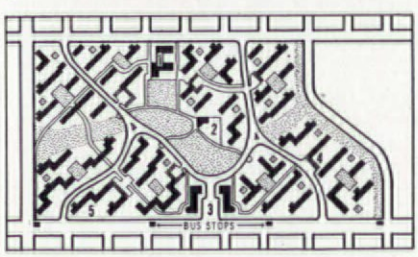
1. SCHOOL 2. COMMUNITY CENTER 3. STORES 4. RECREATION SPACES

7



1. SCHOOL 2. COMMUNITY CENTER 3. STORES

8



1. SCHOOL 2. COMMUNITY CENTER 3. STORES 4. RECREATION SPACES 5. APARTMENTS

1. The first consideration relates the site to its surroundings. Diagram 1 illustrates the peripheral development which will affect building heights, zoned use areas, and adjacent building lines. It locates transportation stops and divides the site into distance areas from these stops. Areas on the site which should relate to the surrounding development are located—schools or commercial sites which will serve a greater area than the project.

2. This study considers the site itself, shows zoning thereon, existing improvements, as well as dedicated streets. Necessary alterations in zoning, vacated streets, and what buildings or utilities are to be used or abandoned are shown.

3. From diagrams 1 & 2, and from studies of topography and soil conditions, the site is divided into use areas which will define the eventual plan. School, shopping and community center areas are spotted as well as areas for dwelling units of different heights. The areas which are not satisfactory building sites are tentatively reserved for park development.

4. The building unit plans selected under Step IV are placed in the best relation to sun and prevailing winds, considering the actual rooms contained in them. A compromise between sun and wind may be necessary according to their relative importance.

5. In the areas determined for residential buildings, conventional building shapes are placed and oriented as found best in the preceding diagram. These represent approximately the required area for the intensity of development desired and serve as a quantity study. Required garage areas are also spotted, divided roughly among the four main building areas.

6. Required recreation spaces are related to the number of families.

7. A theoretical diagram of site circulation, both primary and secondary, to school, commercial, community center, and transportation as previously located. Large circles represent main apartment areas.

8. The actual plan developed from these studies will necessarily be a compromise. It will retain, however, the most important considerations and should be a rational solution of the problem of providing a complete living environment. Diagram 8 shows a preliminary study for a site plan based on this method.

COMPARATIVE PLAN ANALYSIS

After roughing out the building plans, they were checked for desirability of accommodations and to ascertain whether they fell within the allowable cost limits as originally set up under Step 2. The same process is applicable to the site plan. After one or several schemes are sketched out, it is advisable to make a quick estimate of their cost and comparative desirability. An analysis of several plans for a specific site, however, is a somewhat different problem from a similar type of analysis of building plans. Each site plan is a special case, the elements of which may vary widely and will require careful judgment of their merits. The analysis cannot be standardized to the same degree as that of the building plan.

Even more than in the case of building cost, data on site improvement prices must apply to a specific locality and site, as wide variations will occur due to the local soil and topographical conditions.

Prices used in the following analysis are not conclusive nor applicable to any specific project; however, all prices have a relative accuracy in that they are proportionately correct for the brief specifications illustrated.

ANALYSIS OF THE QUALITY OF THE SITE PLAN

Along with a comparison of cost must go a gauge of the desirability of the plan so that an intelligent balance may be maintained between quality and cost, always keeping in mind that a good layout and a satisfied tenant have a definite financial significance over a term of years. Again, as in planning the buildings, the site must be designed to suit the definite needs of the tenants to be housed. Garages, shops, recreational areas and the general type of layout should meet the requirements studied under the first three steps of the procedure.

The chart on page 142 gives a quick means of comparing the quality of several layouts for the same site. A method of rating, essentially similar to the building analysis, is used, which weights various considerations in proportion to their relative importance to the project.

ANALYSIS OF THE COSTS OF THE SITE PLAN

It is as important to analyze the cost of developing the site for a project as to analyze the cost of the buildings to go on that site. Great variations in improvement costs may occur for the same intensity of development. In Step 2, Financial Tests, an estimated amount was allowed for "Improved Land Value" per rental room. This figure included the cost of all streets, utilities, etc., as well as the cost or value of the raw land itself. It is now necessary to check the cost of these improvements together with the cost of the raw land and see if they still fall within the allowable limits.

The method of estimating site improvement costs is essentially similar to that used for building cost. In-place unit costs are built up for convenient units of measure. Since fewer elements are involved in this estimate, it is not necessary or possible to group many costs together except the more obvious. The isometric drawing on page 140 illustrates the groupings on which site improvement costs are broken down. On the facing page are illustrated the items that make up these groups. Sanitary sewer lines and water mains are grouped together, as they usually have approximately the same length. The landscaping estimates include allowances for playground equipment, etc. End walls are included in the site improvement costs as their number is dependent on the site plan, and it is therefore impossible to estimate them under building cost.

In the case of the site plan all of the elements considered on page 141 (cost breakdown sheet) are Variables in that they will vary with each different scheme tried. There is, however, one Constant, *land*, which will remain constant if the number of rooms on the site remain constant, or if its price is fixed (See Article-I, June, p. 454). Land is included in the form on page 143 at the bottom, so that the improvement costs may be judged independently.

FIRST COSTS

The form on page 141 illustrates the manner in which installation costs of pavements, utilities, landscaping, etc., are built up, and is self-explanatory. These costs will apply for a particular project and specification, and will be varied for buildings of different heights (which will require different pipe sizes, etc.) or for different soil conditions. Costs compiled in this way may be used with a reasonable degree of accuracy for estimates.

In all estimates of first costs, only normal grading has been estimated for streets, landscaping, etc., as it is assumed that open developments will permit sufficient latitude in arrangement to avoid excess grading except on unusual sites.

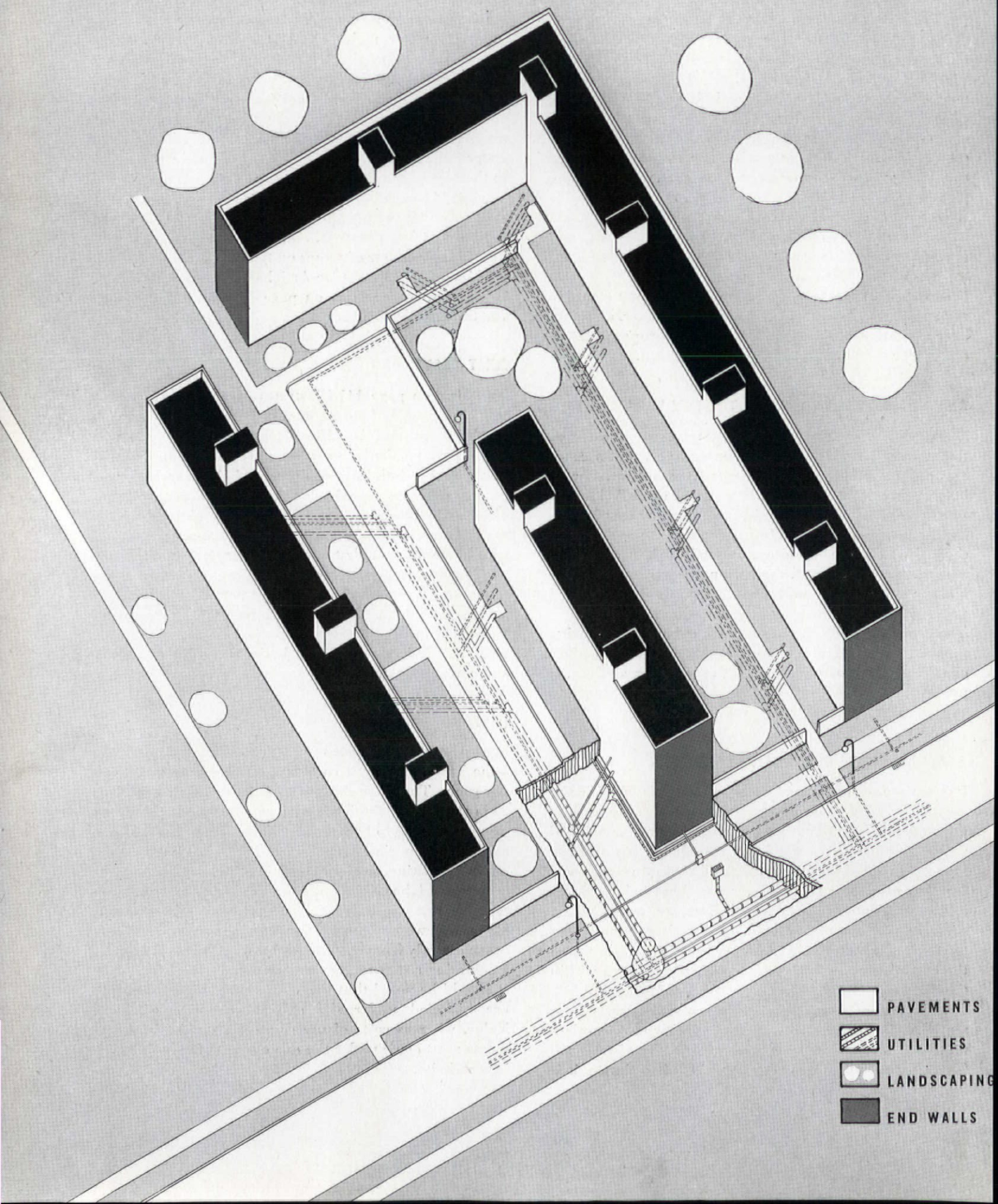
Rental is desired on a room basis, therefore quantities and costs are calculated per room.

COSTS OF USE

Costs of use of site improvements are estimated under the same headings as first costs and on the same quantities per room. These are difficult to estimate accurately, but, as in the case of the buildings, are dependent chiefly on areas or lengths to be maintained. Pavement Costs of Use are based on periodic repairs; utility costs, except public grounds lighting, to simplify estimating, are included in the general labor estimate in the Project Constant. Landscaping costs are based on labor, replacement of plant materials and equipment. Maintenance of end walls is taken directly from cost figures for wall in building costs, subtracting redecorating costs already allowed for.

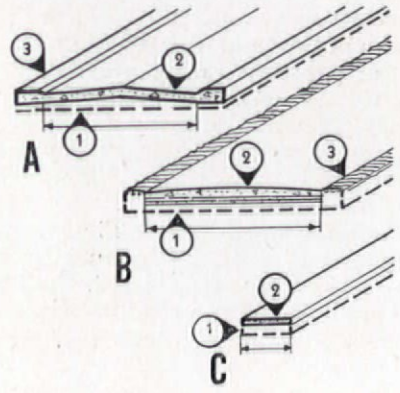
It should be noted that First Costs of site improvements are included under the original estimate of Land Value, whereas costs of use computed on site improvements must come under the one estimate for both buildings and site.

BREAKDOWN OF ELEMENTS
OF COST INTO GROUPINGS



SITE (VARIABLES)

PAVEMENTS



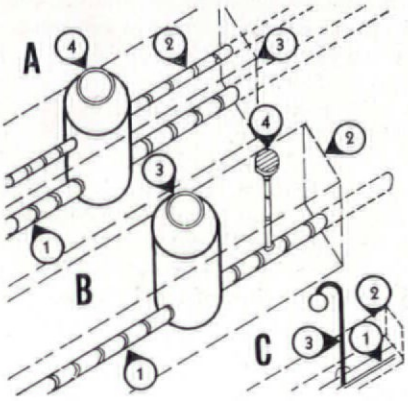
FIRST COST — SPECIFICATIONS

	PER ITEM	PER SQ. FT.	TOTAL
A. 30 FT. PAVEMENT.		$	
1. Grading. 6"	1.00/c.y.	0.018	
2. Reenf. Concr. 8"	2.00/s.y.	0.222	
3. Concrete Curb..	0.55/l.f.	0.018	
TOTAL COST PER SQ. FT.			0.358
B. 18 FT. PAVEMENT & GARAGE COURTS			
1. Grading. 6"....	1.00/c.y.	0.018	
2. Macadam. 6"...	1.60/s.y.	0.18	
3. Cobble st. Gutter	0.25/l.f.	0.014	
TOTAL COST PER SQ. FT.			0.212
C. 5 FT. SIDEWALK			
1. Grading. 6"....	1.00/c.y.	0.018	
2. Concrete. 6"....	0.18/s.f.	0.18	
TOTAL COST PER SQ. FT.			0.198

COST OF USE — ITEMS OF EXPENSE

	ANNUAL FACTOR	PER SQ. FT.	TOTAL
A. 30 FT. PAVEMENT			
Repairs. ..... (Cleaning Included in General Labor).	2%	0.0072	
TOTAL COST PER SQ. FT.			0.0072
B. 18 FT. PAVEMENT.			
Repairs. ..... (Cleaning Included in General Labor).	4%	0.0085	
TOTAL COST PER SQ. FT.			0.0085
C. 5 FT. SIDEWALK			
Repairs.	2%	0.0038	
TOTAL COST PER SQ. FT.			0.0038

UTILITIES



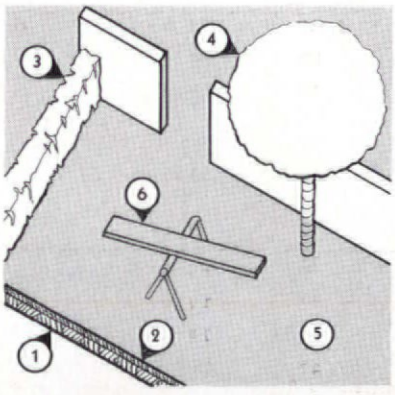
FIRST COST — SPECIFICATIONS

	PER ITEM	PER LIN. FT.
A. SEWER AND WATER MAIN FOR 3 STORY BLDGS.		
1. Vitr. Clay Pipe.	1.85/l.f.	1.85
2. Galv. Iron Pipe. (Incl.: 3. Excav.; 4. Manholes.)	1.10/l.f.	1.10
TOTAL COST PER LIN. FT.		2.95
B. STORM SEWERS.		
1. Vitr. Clay Pipe. (Incl.: 2. Excav.; 3. Manholes; 4. Catch Basins.)	2.25/l.f.	2.25
TOTAL COST PER LINEAL FT.		2.25
C. ELECTRIC LINES & STREET LIGHTING.		
1. Conduit ..... (Includes: 2. Excav.; 3. Standards.)	0.15/l.f. 20.00/ea.	0.15 0.20
TOTAL COST PER LIN. FT.		0.35

COST OF USE — ITEMS OF EXPENSE

	ANNUAL FACTOR	PER SQ. FT.
A. B. Repairs (Included in General Labor).		
C. STREET LIGHTING ...	0.18/lin. ft.	0.18
TOTAL COST PER LIN. FT.		0.18

LANDSCAPING



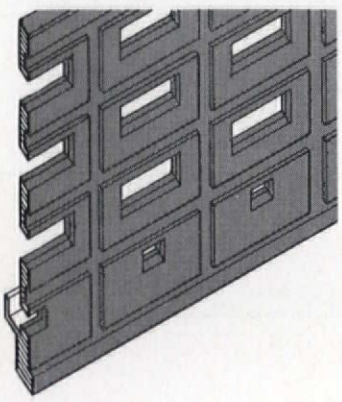
FIRST COST — SPECIFICATIONS

	PER ITEM	PER SQ. FT.
1. GRADING 6" Average Over Surface...	1.00/c.y.	0.018
2. TOPSOIL. 4"...	0.80/c.y.	0.01
3. SHRUBS	Allowance	0.002
4. TREES (15 Per Acre)	8.00/ea.	0.003
5. SEEDING	0.25/s.y.	0.028
6. MISC. EQUIPMENT (Playground, Walls, Etc.)	Allowance	0.015
TOTAL COST PER SQ. FT.		0.076

COST OF USE — ITEMS OF EXPENSE

	ANNUAL FACTOR	PER SQ. FT.
1-5. Maintenance & Replacement...	0.016/s.f.	0.016
6. Misc. Equipment Depreciation.	4%	0.0006
TOTAL COST PER LIN. FT.		0.0166

END WALLS



FIRST COST — SPECIFICATIONS

	Cost/Lin. Ft. of Typical Floor
3 STORY BUILDINGS.	
— Cost of Wall Per Lin. Ft. of Typical Floor	11.308
— Minus Cost of Paint & Plaster... (See Step 4, Building Design, Article 2)	.935
— TOTAL COST of 3 Story Wall Per Lineal Ft.....	31.119
— TOTAL COST of 3 Story Wall, 28 Ft. Wide.....	871.33

Slots in endwalls indicate that beams & columns are omitted, being included in calculation of Floor Area.

COST OF USE — ITEMS OF EXPENSE

	Annual Cost Per Lin. Ft. of Typical Floor
3 STORY BUILDINGS	
— Cost for Wall Per Lin. Ft. of Typical Floor	0.5061
— Minus Cost for Painting	0.085
— TOTAL COST for 3 Story Wall Per Lin. Ft.	1.263
— TOTAL COST for 3 Story Wall, 28 Ft. Wide.	35.36

APPLICATION OF PLAN ANALYSIS

The application of this quality and cost analysis to two different schemes for the same site is illustrated here.

The relative importance of various considerations is evaluated by different weights on the scale of 1-10. Thus in the case below, there being no preferential view, this element is weighted zero.

Elements of quality are considered under three categories: Effect on Internal Space, External Spatial Requirements, and Functional Arrangements.

In the first group, Effect on Internal Space, are noted the percentages (on a 0-10 basis) of apartments that are considered well oriented to sun, prevailing wind, or to have good daylight. The product of this percentage and the weight gives the rating for the item. Consideration is only on an apartment basis as the best arrangement of rooms in the building is not a problem of site planning. Similarly, daylight or privacy is considered not to be affected by the shape of the unit itself—a consideration already covered in the building analysis—but only by the relation to other building units on the site.

The judgment on External Spatial Requirements is based on the planning program in Step 1. Areas are considered either adequate or inadequate according to how near they come to fulfilling the program requirements, and are given a 10 or 0.

In the Functional Arrangement, the elements noted are judged as good, fair, or poor, and given a 10, 5 or 0, respectively. Judgment is made in relation to the convenience of the location, as well as on any effect it may have on adjacent dwellings.

Finally the quality of the units used in different schemes is taken into account. A quality rating has already been made on the building units (see p. 62 July issue). The number of times each different unit is used in the plan is taken as a proportion of the total number of units, and this multiplied by the per cent rating previously determined for that particular unit.

The sum of all ratings gives the total for the plan and may be reduced to the percentage of the highest possible rating to attain a comparative index figure upon which the quality of several plans may be judged.

In the cost comparison, in order to reduce First Costs to the common denominator of rent, the financial factor (Step-2, Article-1) of 8.3 per cent is assumed. Both first costs and costs of use are reduced to a monthly basis and the total figure serves as a means of a cost comparison between different schemes.

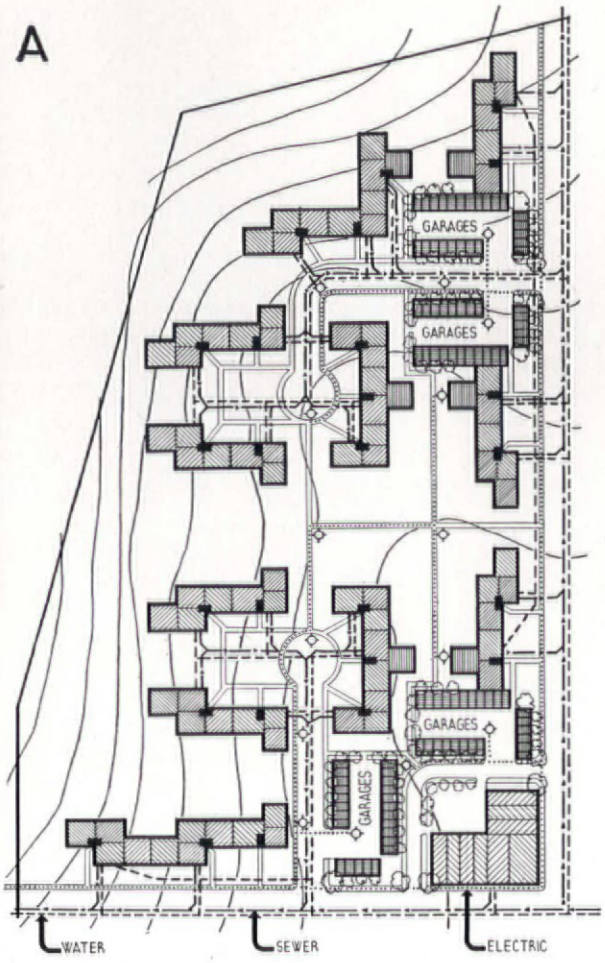
Scheme B shows by the rating to possess more important desirable characteristics than Scheme A. This is due principally to its superior orientation to both sun and wind, and to the fact that buildings do not parallel traffic streets, and therefore receive less street noises. Neither plan recognizes the important consideration of recreation space adequately, and so both are penalized.

It should be noted how little difference in rental is made by two such totally different plan solutions; the final choice depends largely on quality.

At the bottom of the cost chart land cost is included. Frequently it will be found when land cost is fixed, and particularly when low-priced, that a well-planned scheme with fewer buildings or rooms will cost less than a more intensive development. Care in laying out utilities and streets can offset the heavy portion of land cost each unit will have to bear.

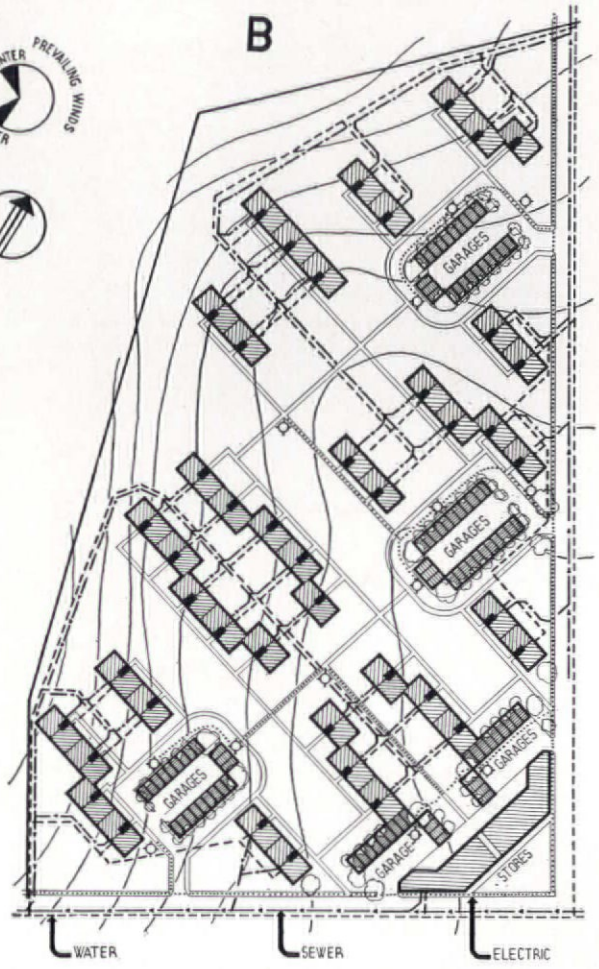
QUALITY		SCHEME A 924 ROOMS		SCHEME B 940 ROOMS	
	Weight	Prop. of Apts.	Rating	Prop. of Apts.	Rating
1. Well oriented to sun	10	8	80	10	100
2. " " " wind	8	6	48	10	80
3. " " " view	0	No preference		No preference	
4. Good daylight (courts at least 40 ft.)	5	10	50	10	50
5. Adequate privacy (courts at least 50 ft.)	8	9	72	10	80
1. Adequate playgrounds	10	no	0	no	0
2. " garage space	3	10	30	10	30
3. " parking "	2	10	20	10	20
4. " store "	2	10	20	10	20
1. Relative to peripheral nuisances (traffic, noise, etc.)	10	Grade 5	50	Grade 10	100
2. Relation of playgrounds to plan	2	5	10	10	20
3. " " garage space " "	3	10	30	10	30
4. " " store " " "	3	10	30	10	30
5. " " transportation "	6	10	60	10	60
6. Circulation between bldg. groups	3	10	30	10	30
7. Motor access to buildings	5	10	50	5	25
STRIP—PLAN	9.7	0	0	10	97
L—PLAN	8.9	3.8	34	0	0
T—PLAN	8.8	2.4	21	0	0
Z—PLAN	8.6	3.8	33	0	0
TOTAL WEIGHTED RATINGS	**89.7**		**668**		**772**
% OF 100% SITE PLAN (897 = 100% QUALITY)			**%**		**%**

A





B



COSTS

	Unit of Measure	First Cost Per Unit Measure	Cost of Use Per Unit Measure	SCHEME A AMOUNTS PER ROOM (924 Rms) Units of Measure Per Room	First Cost	Rental Effect of First Cost PRPM	Cost of use	Rental Effect of Cost of Use PRPM	Rental Effect of First Cost & Cost of Use PRPM	SCHEME B AMOUNTS PER ROOM (940 Rooms) Units of Measure Per room	First Cost	Rental Effect of First Cost PRPM	Cost of Use	Rental Effect of Cost of Use PRPM	Rental Effect of First Cost & Cost of Use PRPM
PAVEMENT:															
A. 30 ft. road	1 sq.ft.	.358	.0072	20.7	7.40	.05	.15	.012	.062						
B. 18 ft. drive & garage courts	1 sq.ft.	.212	.0085	48	10.20	.07	.41	.034	.104	54	11.45	.08	.46	.039	.119
C. 5 ft. walks	1 sq.ft.	.198	.0038	20.6	4.10	.03	.08	.006	.086	29.2	5.78	.04	.11	.01	.05
UTILITIES:															
A. san. sewer & water main	1 lin.ft.	2.95		2.4	7.10	.05			.05	4	11.80	.08			.08
B. storm sewer	1 lin.ft.	2.25		Combined with san. sewer						Combined with san. sewer					
C. electric lines	1 lin.ft.	.35	.18	1.6	.55	.003	.29	.025	.028	1.5	.52	.004	.027	.002	.006
LANDSCAPING	1 sq.ft.	.076	.0166	310	23.60	.16	5.15	.43	.59	350	26.60	.184	5.80	.48	.664
END WALLS	1 wall	871.33	35.36	.024	21.	.14	.85	.071	.211	.046	40.	.276	1.62	.132	.408
TOTAL COST OF IMPROVEMENTS					73.95	.503	6.93	.578	1.08		96.15	.664	8.017	.663	1.327
LAND	1 sq.ft.	.30		520	156.	1.08			1.08	510	153.	1.06			1.06
TOTAL COST OF LAND AND IMPROVEMENTS					229.95	1.583	6.93	.578	2.16		249.15	1.724	8.017	.663	2.387

6 PROJECT SUMMARY

In Step 1 the problem was formulated. In Step 2 this problem was tested for financial feasibility and a tentative estimate of capital cost was made. In Step 3 a suitable site was selected.

Step 4 was the first step in the architectural solution. Several building units were planned to fit the conditions previously outlined. These were analyzed for quality and estimated more accurately for cost.

In Step 5 several different site schemes were made and analyzed for quality and cost. Compromises and adjustments were made to conform to the tentative cost estimate made in Step 2.

Schemes A and B outlined in Step 5 show little difference in site development costs. Scheme B, although more desirable in the quality rating, makes use of a more expensive building unit, as estimated in Step 4. A complete financial summary is now necessary to ascertain which scheme is more feasible.

Below appear two complete financial set-ups for the two schemes (based on the original tentative estimate and type of financing shown as an example in Article 1). Total figures on costs are merely built up from the per room estimates already made. Changes dependent on these costs, such as fees, carrying charges, taxes, interest, etc., are computed in detail. The items are self-explanatory.

PROJECT COST

SCHEME A 920 ROOMS			Final Estimate Per Room	TENTATIVE ESTIMATE STEP 2.	Final Estimate Per Room	SCHEME B 940 ROOMS		
LAND						**LAND**		
1. Raw 480,000 sq.ft. @ 30c	$144,000.		$156.		$153.	1. Raw 480,000 sq.ft. @ 30c	$144,000.	
2. Improvements 920 Rms. @ $29.35 (Pavements and Utilities)	27,000.		29.35		29.55	2. Improvements 990 Rms. @ $29.55 (Pavements and Utilities)	27,750.	
TOTAL IMPROVED LAND COST		$171,000.	185.35	$160.	182.55	TOTAL IMPROVED LAND COST		$171,750.
BUILDINGS						**BUILDINGS**		
3. 10 Ls—315 Rms. @ $798.81, 6 Ts—185 Rms. @ $805., 10 Zs—420 Rms. @ $779.26, End Walls—920 Rms. @ $21.	747,400.		813.		876.34	3. Strips—940 Rms. @ $836.34, End Walls—940 Rms. @ $40.	824,000.	
4. 96 Garages @ $250.	24,000.					4. 96 Garages @ $250.	24,000.	
5. 189,000 cu.ft. Stores @ .18	34,000.					5. 189,000 cu. ft. Stores @ .18	34,000.	
CONSTRUCTION COST		805,400.	875.	800.	942.	CONSTRUCTION COST		882,000.
ADDITIONAL CHARGES						**ADDITIONAL CHARGES**		
6. Landscaping	21,700.		2.7%	2%	2.8%	6. Landscaping	25,000.	
7. Fees (builder & architect) 8% of items 2 to 6	68,400.		8.5%	8%	8.5%	7. Fees (builder & architect) 8% of items 2 to 6	74,700.	
8. Carrying charges (8 mo.)	13,000.		1.6%	2%	1.6%	8. Carrying charges (8 mo.)	14,000.	
9. Miscellaneous Charges						9. Miscellaneous charges		
Arranging financing 1½%	11,500.					Arranging financing 1½%	12,500.	
Legal fees	3,000.					Legal fees	3,000.	
Mortgage registration	2,000.					Mortgage registration	2,000.	
Cash working capital	12,500.					Cash working capital	11,500.	
	29,000.		3.6%	3%	3.3%		29,000.	
TOTAL ADDITIONAL CHARGES		132,100.	16.4%	15%	16.2%	TOTAL ADDITIONAL CHARGES		142,700.
TOTAL CAPITAL COST		$1,108,500.	$1204.	$1080.	$1272.	TOTAL CAPITAL COST		$1,196,450.

FINANCING

EQUITY			
1. Land	$144,000.		(13.%)
2. Cash	178,000.		(16.%)
3. Fees	16,500.		(1.%)
Total equity		$338,500.	30%
Total mortgage		770,000.	70%
TOTAL CAPITAL COST		$1,108,500.	

EQUITY			
1. Land	$144,000.		(12%)
2. Cash	200,000.		(16.7%)
3. Fees	17,450.		(1.3%)
Total equity		$361,450.	30%
Total mortgage		835,000.	70%
TOTAL CAPITAL COST		$1,196,450.	100%

It will be noted that the final cost estimates of the two schemes are consistently slightly higher than the original tentative set-up allowed, particularly for Improved Land Cost and Cost of Use. The set-up of Scheme A, however, shows a surplus even with these higher costs due to the income derived from the accessory buildings—garages and stores. These buildings earn more income than is necessary to pay for the annual charges against them, and this excess income is used to pay for the slight additional cost of the dwellings above the original estimates. Thus, the stores and garages have the effect of subsidizing the dwellings.

It is difficult, though possible, to predetermine the effect this accessory income will have in reducing the rent of the dwellings. For simplicity's sake, it is best to regard this extra income as additional surplus which will make the set-up sounder by acting as a further "cushion" against contingencies, or which will permit of a more rapid amortization of the mortgage. Usually this income will allow for a small leeway in costs above the original estimate necessary to attain a given rental—as in Scheme A a leeway of $35 PR in capital cost, and of $8 PRPA in cost of use is permitted.

INCOME AND EXPENSE

SCHEME A 920 ROOMS

			FINAL ESTIMATE	TENTATIVE ESTIMATE STEP 2.
INCOME				
1. 920 Rms. @ $11.70 PRPM	$129,000.		$11.70	$11.70
2. 96 Garages @ 5 PM	4,600.			
3. 157 front ft. Stores @ $5	9,400.			
GROSS INCOME		$143,000.		
GROSS EXPECTED INCOME (93.5%)		134,000.	93.5%	93.5%
EXPENSE				
1. Cost of Use Ls—315 Rms. @ $43.63 Ts—185 Rms. @ $45. Zs—420 Rms @ $42.29 Site—920 Rms.@ $6.93	46,180.		50.20	42.
2. Real estate taxes ($1.50 on 75%)	12,500.		1.13%	1.13%
3. Interest on mortgage (5%)	38,700.		3.5%	3.5%
4. Amortization (1.5%)	11,600.	108,980.	1.05%	1.05%
Available for dividends & surplus		25,020.		
5. Income tax	1,900.		.17%	.22%
6. Return on equity (5%)	17,000.	18,900.	1.5%	1.5%
7. SURPLUS		6,120.	.6%	.9%

SCHEME B 940 ROOMS

			FINAL ESTIMATE
INCOME			
1. 940 Rms. @ $11.70 PRPM	$132,000.		$11.70
2. 96 Garages @ $5 PM	4,600.		
3. 157 front ft. stores @ $5	9,400.		
GROSS INCOME		$146,000.	
GROSS EXPECTED INCOME (93.5%)		137,000.	93.5%
EXPENSE			
1. Strips—940 Rms. @ $46.23 Site—940 Rms. @ $8.02	51,000.		54.25
2. Real estate taxes ($1.50 on 75%)	13,500.		1.03%
3. Interest on Mortgage (5%)	41,800.		3.5%
4. Amortization (1.5%)	11,600.	118,900.	1.05%
Available for dividends & surplus		18,100.	
5. Income tax	1,200.		.1%
6. Return on equity (4.7%)	16,900.	18,100.	1.4%
7. SURPLUS		00.	0%

From these estimates, Scheme A is more feasible due principally to its lower capital cost. This saving is made in the cost of the building units used in this scheme. Although Scheme B is somewhat more desirable, it shows no surplus when a 4.7 per cent return is figured on the equity invested and so is not possible at the obtainable rent—$11.70 PRPM. However, adjustments and economies in B might enable it to achieve the cost limit. Study should be made along this line before abandoning it entirely.

6 PROJECT SUMMARY

The following summary shows the method carried through a particular project.

1 TENANTS' HOUSING NEEDS

ANALYZE THE TENANTS' NEEDS, TRANSLATE THEM INTO A PLANNING PROGRAM AND ESTABLISH THE RENT THEY CAN PAY.

TENANT ANALYSIS	→	PLANNING PROGRAM
NUMBER OF FAMILIES—400	→	**NUMBER OF APARTMENTS**—400
SIZE / **DISTRIBUTION** 2 persons — 30% 3 " — 40% 4 " — 25% 5 " — 5%	→	**SIZE** / **DISTRIBUTION** 2 rooms — 5% 3 " — 25% 4 " — 65% 5 " — 5%
AVERAGE FAMILY—3.05 persons	→	**AVERAGE APARTMENT**—3.7 rooms
PRESENT LIVING ENVIRONMENT AND HABITS		**PRESENT LIVING ENVIRONMENT**
SITES Density—300 persons per acre Ownership—various Recreation space—none	→	SITES Density—150 per acre Ownership—cooperative Recreation space—1 acre
DWELLINGS Type—apartment Height—5 stories Construction—semi-fireproof Services—heat, hot water, janitor Average net room size—130 sq. ft.	→	DWELLINGS Type—apartment Height—3 stories Construction—fireproof Services—heat, hot water, janitor, incinerator Average net room size—136 sq. ft. (Estimated gross room area 210 sq. ft.)
ACCESSORY BUILDINGS In neighborhood	→	ACCESSORY BUILDINGS None required
AVERAGE FAMILY INCOME—$2,000 per annum Per cent approved for housing 20% or $33.33 per family per month	→	**OBTAINABLE RENTAL** $33.25/family PM, $9.00 PRPM

2 FINANCIAL TESTS

FIND OUT THE AMOUNT OF SPACE THE FIXED RENTAL WILL SUPPORT AND JUDGE IT BY COMPARISON WITH 1. ESTABLISH THE LAND VALUE WHICH THE RENTAL WILL ALLOW.

TRIAL	1.	2.	3.	4.
INCOME				
Rent PRPM	$9	$9	$9	$9
Expected Rent Ratio	95%	95%	95%	95%
ANNUAL CHARGES				
Cost of Use PRPA	$40	$40	$40	$40
Real Estate Taxes 1.5% x 75%	1.13%	1.13%	1.13%	1.13%
Interest on Mortgage 490 x 70%	2.8	2.8	2.8	2.8
Amortization (40 yrs.) 1.05 x 70	.735	.735	1.25%	.735
Income Tax estimated	.2	.2	.2	.2
Return on Equity cooperative				
Surplus estimated	1.2	1.2	.8	1.2
Total Factor	6.065	6.065	6.18	6.065
CAPITAL COSTS				
Allowable Capital Cost	$1,040	$1,040	$1,020	$1,040
Room Size	210	200	200	200
Construction Cost Per Sq. Ft.	$3.75	$3.75	$3.75	$3.75
Construction Cost Per Room	$787	$750	$750	$750
Additional Charges	16%	16%	16%	16%
Total Building Cost	$914	$870	$870	$870
Total Improved Land Value	$126	$170	$150	$150
Density—Persons Per Acre	150	150	150	200
Improved Land Per Sq. Ft.	$.435	$.585	$.515	$.78
Estimated Raw Land Cost	$.33	$.48	$.41	$.64

COMPROMISE 1.

1. Tested Planning Program shows low permissible value for land.
2. Slight compromise in size of rooms allows higher land value. This higher value also important in making sufficient equity.
3. Possible shortening of amortization period by ten years, raising financial factor. This is somewhat offset by decreasing estimated surplus. The result: a somewhat lowered land value.
4. Compromise was made to discover what density is necessary to justify a land value of 60 cents per sq. ft. This density will be slightly lower than 200 persons per acre.

3 SITE SELECTION

FIND A SITE THAT FULFILLS THE REQUIREMENTS SET IN **1** AND **2.**

Several sites are studied under the following headings and the best selected:

RELATION TO CITY	RELATION TO NEIGHBORHOOD	SITE CHARACTERISTICS
ZONING	ZONING	TOPOGRAPHY
LAND USE	LAND USE	PERIPHERAL DEVELOPMENT
ASSESSED LAND VALUE	ASSESSED LAND VALUE	EXISTING IMPROVEMENTS
TRANSPORTATION	POPULATION DENSITY	
POPULATION DENSITY	RENTS	
RENTS	COMMUNITY FACILITIES	

COMPROMISE 2.

No site is found that may be acquired for the price indicated in Test **2** above. Accordingly Test **4** is made to find what density will be necessary to justify a land value of **60** cents per sq.ft. Compromise necessary with original program of **150** persons per acre.

4 THE BUILDING DESIGN

FROM THE HOUSING VOCABULARY OF COMMON PLANNING FACTORS FORM THE BUILDING UNITS. ANALYZE COSTS AND QUALITY OF THE ACCOMMODATIONS.

Typical building units are planned at the approximate average gross room area established in STEP 2, Trial 4. When roughed out they are analyzed for quality and estimated for cost with the following results:

	STRIP	L—PLAN	T—PLAN	Z—PLAN
QUALITY RATING	95%	89%	88%	82%
FIRST COST PR	$730.	$722.	$770.	$715.
COST OF USE PRPM	$ 36.	$ 34.	$ 32.	$ 41.

COMPROMISE 3.

Three of the units fall reasonably close to required cost of **$750** PR; so selection should take place on quality of accommodations alone. Strip unit is therefore selected for principal use on site plan. If T unit is used, cost reductions will be necessary as estimated cost is too high. If all costs had been this high, all units would need revision and economies made either by cutting room sizes or quality of materials used.

5 SITE PLAN

FROM THE SITE VOCABULARY OF COMMON PLANNING FACTORS PLAN THE SITE. ANALYZE COSTS AND QUALITY OF THE SITE PLAN.

Several schemes are tried on the site, using as many of the prepared building units already selected as possible. The following schemes were analyzed and estimated:

		SCHEME X	SCHEME Y	SCHEME Z
QUALITY		82%	76%	88%
FIRST COST PR (IMPROVEMENTS, LANDSCAPING AND END WALLS)		$71.	$62.	$75.
COST OF USE PRPA		$5.	$3.50	$7.50
NUMBER OF ROOMS		1,475	1,500	1,450
RAW LAND COST PR		$133.	$131.	$135.
NUMBER OF ROOMS IN UNITS USED	STRIPS	950	630	1,450
	L's	550	408	
	Z's		462	

COMPROMISE 4.

Since little difference is shown in development costs, the best plan is selected. It is necessary to make complete set-ups to compare cost differentials on the schemes due to variations in the costs of the unit types used.

6 PROJECT SUMMARY

SET UP A TOTAL PROJECT COST ESTIMATE AND MAKE A FINAL FINANCIAL SET-UP.

	SCHEME X	SCHEME Y	SCHEME Z
	1,475 Rooms	1,500 Rooms	1,450 Rooms
PROJECT COST			
TOTAL LAND COST	$ 243,000	$ 237,500	$ 247,000
TOTAL BUILDING COST	1,260,000	1,250,000	1,230,000
MISCELLANEOUS CHARGES	45,000	45,000	45,000
TOTAL CAPITAL COST	$1,548,000	$1,532,500	$1,522,000
INCOME AND EXPENSE			
EXPECTED INCOME	$ 151,000	$ 154,000	$ 148,500
COST OF USE	60,300	60,750	63,000
FIXED CHARGES	75,100	74,500	74,000
SURPLUS	15,600	18,750	11,500
QUALITY	82%	76%	88%

Scheme X offers the best compromise between quality and surplus. In Scheme Y, the quality rating is considered too low and Scheme Z does not provide enough surplus.

This technique, as developed in these articles, is sufficient to demonstrate that the housing problem is not just technical, as so many architects and planners seem to imagine, but also economic. It is quite true that new methods of construction may appreciably lower costs of building and so have an important effect on rentals, but the building is only one element in a complex where people, land, and money play equally vital roles. Housing is not solely the architect's problem: banker, landowner, industrialist, legislator—all are responsible for the present state of our living accommodations and the contributions of all are required for a solution. If the architect is to assume a position of authority in the development of future housing programs he must understand the relative importance of the factors involved.

A major obstacle in the way of good housing is the public's lack of interest. This inertia is due to ignorance of what constitutes good housing. Educated too often by the humbug of unscrupulous promoters and speculators, people buy shoddy, badly planned houses with a few modern gadgets. It is claimed that such houses are demanded. The only basis for this "demand" is the general lack of better accommodations.

For those whose low incomes force them to dwell in slums, good housing is of the greatest importance. The authors' use of their technique in a study of this field, however, has led them to the conclusion that with building, land, and money costs where they are today housing for the masses of low-wage earners cannot be successfully provided by unaided private enterprise.

Probably the greatest benefit that could come from a large-scale housing program today would be a demonstration of what the planning of a complete living environment might mean. With this standard yardstick to guide them, people with sufficient income to make their wants felt might register a real demand based on something more fundamental than misleading advertisements.

These articles describe a technique of planning. The solution of a problem whose roots are deep in the social structure is outside the present scope.

BUILDING MONEY

A monthly section devoted to reporting the news and activities of building finance, real estate, management and construction

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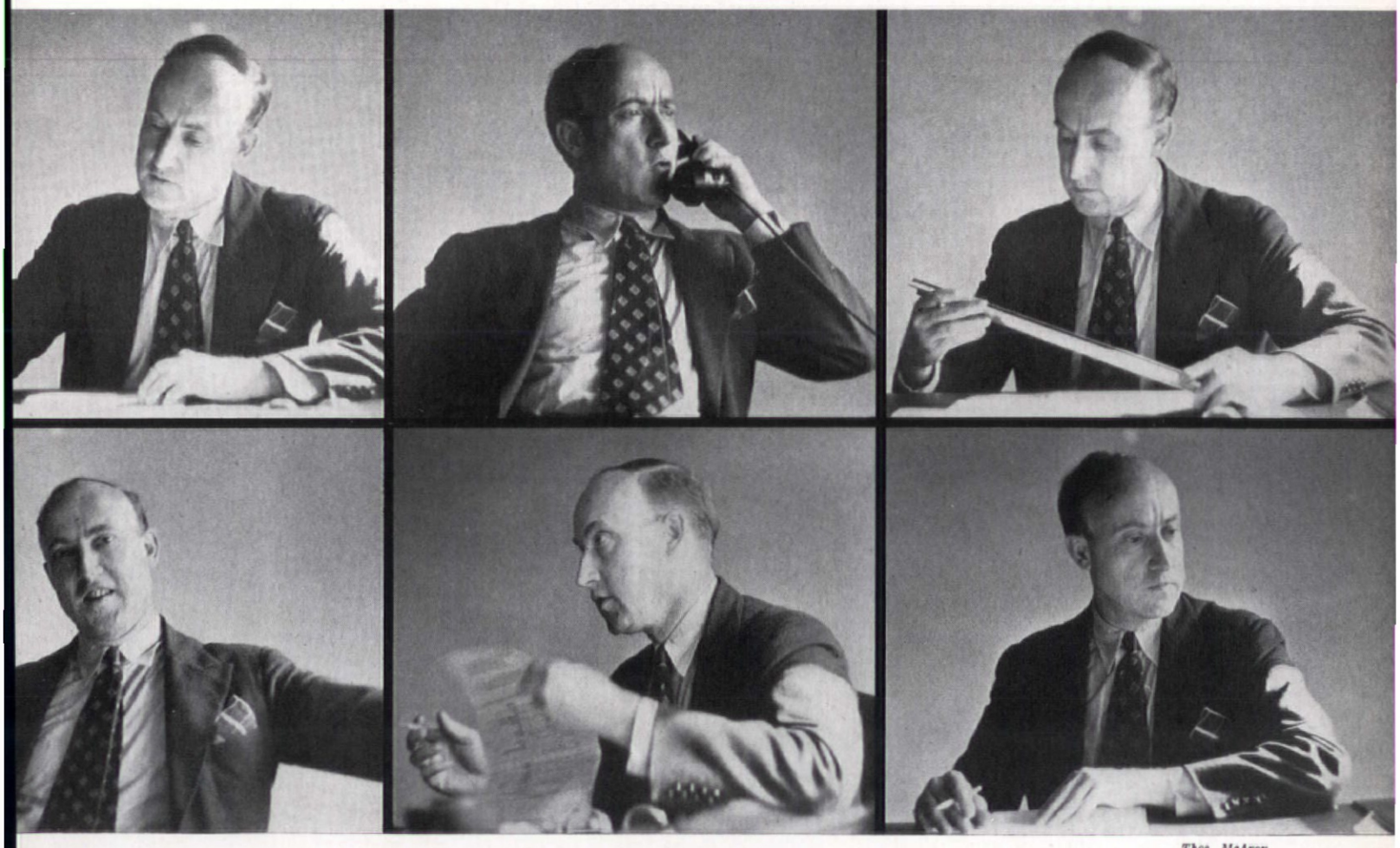
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Thos. McAvoy

Man of the Month GUY EDWARD GREER (see Page 150)

A NEW POLICY FOR HOUSING

is adopted by the Federal Housing Administration as it turns from sales to rental insurance. A reorganization and how it works.

HOUSING under the New Deal has been a series of experiments conducted on the broad base of an empiricism which has been willing to try a great many things once. Of the 41 Federal agencies now concerned with housing, the six most important ones express concepts which are frequently at wide variance, sometimes contradictory. Last month, however, the empiric period seemed at last to have drawn to a close, and the policy of the Government on housing stood out in clearer definition than ever before. This was due partly to a fortuitous series of events, partly to the conscious planning of a handful of Washington Housers.

Finis. First event was the announcement last month by PWA's Director of Housing Angelo R. Clas that the Division would entertain no new projects, that its books were forever closed. This fact had been announced just as formally once before, but an interim flirtation with Senator Wagner and his Housing Bill apparently made the second announcement necessary. Defining the Division's work as a "national demonstration," Director Clas reported that he had contracted to house 25,000 families in 50 projects for $130,000,000.

Same week he gave some idea of PWA's significance as a low-cost housing program when he announced the rental schedule of Techwood, in Atlanta, Ga., the first project to be completed. This unit contains 604 apartments in a fireproof structure which covers 25 per cent of its plot and offers cross ventilation, incinerators, tiled baths, refrigeration. The rentals run from $22.35 for three rooms to $39.65 for six, with an average of $7.39 per room per month, including heat, light and refrigeration. But nobody save those now living in slums in Atlanta is eligible for occupancy.

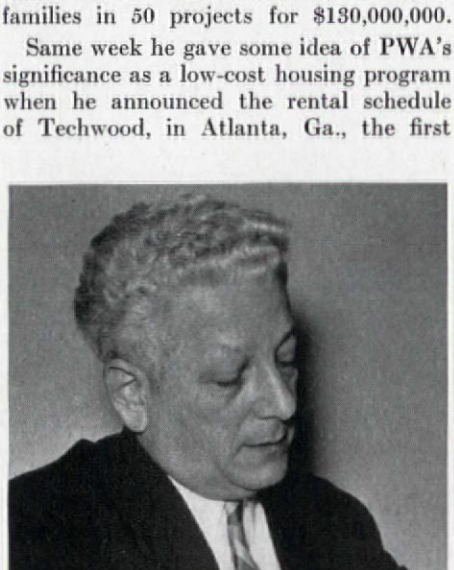
Also last month orders went out from Washington to 286 State offices of the Home Owners Loan Corporation to take down the "Loans Here" signs, hang in their stead, "Pay Here." Thus did the HOLC formally terminate its lending career, prepare to sit tight on three billion dollars of the worst realty debts in the U. S.

Finally, the Resettlement Administration, having been set far back on its heels by the Washington, D. C., decision enjoining its housing activities at Bound Brook, N. J. month before last, had ruminated sufficiently to admit unofficially that its chances of prolonged life were slim; so slim in fact that it is currently concentrating all its efforts on its project at Berwyn, near the capital, trying to top out at least one before injunction.

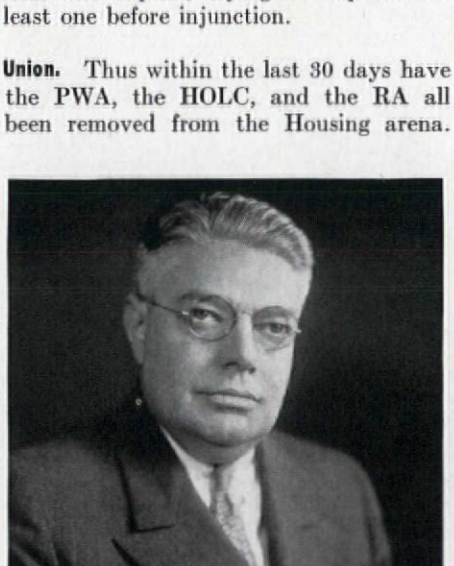
Union. Thus within the last 30 days have the PWA, the HOLC, and the RA all been removed from the Housing arena. Thereby left in the field are the Federal Housing Administration, the Home Loan Bank Board and the ardent but unofficial Housers. That these groups have been unable to agree is notorious, but by last month they too were showing first signs of a new unanimity. Cause of this untoward phenomenon was an intramural squabble that flared up in the closing days of Congress. The Wagner Housing Bill was up for consideration. Because it was not a particularly good bill and because at that time he could demand funds for only the best of bills, the President had turned thumbs down on its passage. Perhaps emboldened by this fact, the FHA was engaged in some side-line sniping at the measure when to its dismay it flushed President Green of the American Federation of Labor, who had decided to pleasure his craft unions by lobbying for more building, and had picked Wagner's Bill as the best in view. When the FHA and the A. F. of L. found themselves thus unexpectedly face to face across a fence, the latter threatened to withdraw its support of the FHA. Thoroughly scared, FHA officials came out with a public statement endorsing the Wagner Bill. The Bill failed but the Housers had learned their lesson, and are now thinking seriously of getting together on their own initiative—before the White House forces them to.

With Housing thus stripped for action and partially united, the obvious leader of the parade has become the FHA, and last month it signalized this fact in a number of unobtrusive fashions. Among other things it celebrated the third anniversary of the passage of the Housing Act which created it; issued Vol. 1, No. 1, of *Portfolio*, a 24-page, shiny paper monthly devoted to the insured mortgage; and reorganized its Large-Scale Housing Division.

FHA. In a pat and perhaps oversimplified sense the history of the FHA's approach to the problem of housing has been the history of the whole New Deal's approach to that problem. Emergency was met by Title I, the modernization program (broadly paralleled in intent by the HOLC).*



Assistant Klaber



Harris & Ewing Photos

Assistant Dusenberry

* Last month the President signed the Bill continuing Title 1. Equipment that is not a fixed part of a house is no longer eligible for insurance, nor is new construction. The amount of insurance to be granted to the lending banks has been reduced from 20 per cent to 10 per cent. Experience has already shown that the losses are far below ten.

Next came the insuring of mortgages on new homes, a recovery measure whose major purpose (paralleled by PWA) was to encourage construction. Finally and unobtrusively there has burgeoned the insurance of large-scale rental projects, the branch of FHA's activities just now receiving the greatest amount of attention. This appears to represent the nucleus of a program which, following the Emergency and the Recovery programs, may yet become known as the Permanent Policy.

Section 207 of the National Housing Act had defined what sort of housing fell within the province of the Large-Scale Housing Division; and the Large-Scale Division presently redefined it to mean "any project which might prove to be economically sound and which might meet a real housing shortage among groups for whom rental units produced in large groups would be suitable." This, in effect, put within the Division all multi-unit rental projects not in the highly speculative or luxury classes.

To finance this housing the Division can get one or more lending institutions to assume the mortgage, or bonds can be issued to the public, or a coöperative group can underwrite its own construction. (ARCH. FORUM, Nov., 1935, p. 520.) Thus the basis and the method of the Government's program to stimulate rental projects. Both basis and method are so wide in possibilities that the results have shown a variance ranging from $4 per room per month straight up to $17. Today the Large Scale Division's books show:

Colonial Village at Clarendon, Va., completed in September, 1935. Its mortgage of $875,000, insured by FHA, was security for an insurance company loan.

An addition to Colonial Village, of the same type of construction and planning but larger, is now being built and will be ready for occupancy this summer. Its mortgage of $1,480,000, insured by FHA, was the basis for a loan by the same insurance company.

A public spirited development at Meadville, Pa. is also under construction, to alleviate a housing shortage among the factory workers of that city. The mortgage insured by FHA on that project amounts to $800,000.

Financing for seven projects totaling insured mortgages of $9,940,000 has been arranged. They are located in New York, Delaware, Arkansas, Ohio, Montana and Maryland.

Commitments have been issued by Federal Housing Administrator Stewart McDonald to insure mortgages on nine other large-scale housing projects totaling in amount $20,407,158, to be located in New York, Massachusetts, Virginia, and the District of Columbia.

Various schemes of planning were employed in the foregoing projects. Elevator apartments vary from six to eight floors. Non-elevator apartments range from two to four stories. There were detached houses of varying sizes. Room rentals varied from $6 to $18 per month per room.

In addition to the mortgages insured or for which commitments have been issued, a sizable sum is represented in those projects which have been examined and for which the conditions of acceptance have been outlined by the Large-Scale Housing Division. This classification totals $27,390,000.

The remainder of the projects now being examined number 39, and the proposed mortgages total $84,128,122. The grand total of insured mortgages, mortgages for which commitments to insure have been issued, those for which conditions of acceptance have been outlined, and proposed mortgages, amounts to $133,905,280. Of a total of $427,352,378 worth of projects submitted, $293,437,098, or 68 per cent, has been rejected or withdrawn.

The first application—that of Colonial Village—was received in the FHA offices on January 15, 1935, and since that day Director of Large-Scale Housing Miles Colean has been constantly obliged to modify and reorient his financing technique. At the outset of the program he was faced with the dour fact that generally speaking large-scale housing in this country had never taken any form but that of the multi-family, multi-story apartment building—and that, of all real estate, the financial condition of the apartment is today probably the worst. He had, therefore, the two-fold problem of restoring confidence in large-scale housing as a mortgage investment and at the same time of liberalizing the lending policies of the coöperating institutions to a point at least never before openly admitted.

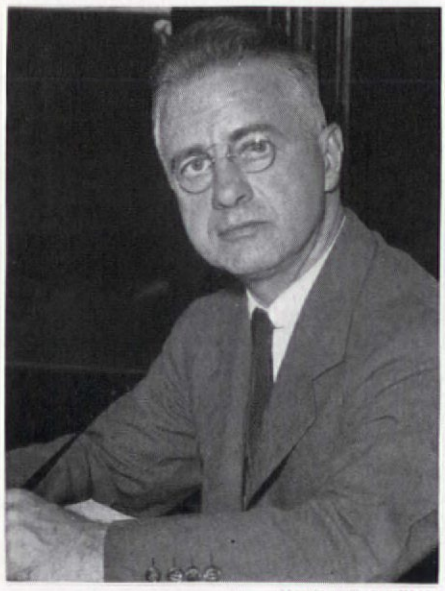
The amount of money required by the mortgage of any project which the Large-Scale Division could entertain must necessarily be large, must, generally speaking, run well above $750,000. It was assumed at the outset of the program that the life insurance companies, who are accustomed to making large loans for their own investment, would be the ideal source of mortgage money. However, due largely to the fact that this type of institution was generally already overloaded with real estate investments, little response was elicited from them.

To ease this situation the RFC Mortgage Company was, last April, induced to make insured mortgages on large-scale projects under certain stringent conditions, the main ones being that no private lending institution offer to make such a mortgage, and that the project to be financed in no way compete with private building efforts. It then sets its terms to equal but never to exceed the most favorable obtainable in the lending field.

Turning its attention from the attraction of the single mortgagee to the uses of the bond issue, the FHA had by last Winter evolved a hopeful program to interest investment houses in large-scale housing as an investment. First step had been to insert enabling amendments in the Housing, Banking, and Bankruptcy Acts of 1935 allowing more than one institution to share in a single FHA Large-Scale Housing mortgage.

There arose, however, a difficulty in the operation of the bond participation scheme which has yet to be satisfactorily overcome. Guaranteed by the FHA or not, the real estate bond has garnered for itself such a bad name during the Depression that it is still heavily suspect in the investing public, and so cannot achieve any sort of wide acceptance without prohibitive cost. However, the bond issue remains in use today as a workable instrument for allowing the legal participation of more than one banking institution in one mortgage.

Policy. With this much in experience tucked under its belt, the FHA Large-Scale Housing Division felt itself ready



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Assistant Roess



COLONIAL VILLAGE is the name of the first Large Scale housing project ever to be insured by the Federal Housing Administration. The project covers 25 acres in Clarendon, Va., across the Potomac from Washington. The Ring Construction Company made its original application for an FHA insurance commitment on an $875,000 mortgage on January 12, 1935. On February 15 the commitment was issued. Financing by the New York Life Insurance Company was arranged, and work started April 18. The entire project was ready for occupancy on October 1, 1935.

For $1,128,600 there were erected 276 two-, three-, and four-room apartments, completely landscaped and serviced with all utilities. Average rental is $12.50 per room.

Amortization payments are now 18 months in advance, and there is a long waiting list. Currently construction has started on an extension to accommodate 418 additional families.

last month to define its permanent policy. And with mortgagees nicely lined up, the major question that policy had to answer was this: How can the equity investor (the self-starter of all projects) be attracted? Because the equity investor is almost always recruited from the building rather than the financing field, he is not equipped to put up a large equity on his own. And yet he always has and probably always will regard his equity as a speculative rather than an investment holding. Thus a small equity with a high return has become the desideratum of the Large-Scale Division. To achieve this, its only chance at building, the Division last month redefined its mortgage policy and revamped its administrative set-up.

To attract for the benefit of the equity holder a high ratio of principal amount to asset value, the Division has enunciated a series of regulations of which essence is that the investor will be recompensed for raising the ratio of his principal by getting sounder construction, design and finance methods in the project. In other words, the FHA is undertaking to guarantee not only the mortgage, but in order to make that mortgage bigger, the quality of the project which secures that mortgage.

In the face of such representation to the principal investor, the quality of the investment contributed by the equity will be subject to careful scrutiny. Main consideration will be the character of the holders of the equity, which must be such as to convince the FHA of a continuing interest. The amount of the equity required has never been subject to any rigid definition for the very sensible reason that such a definition will tend to make the equity holders—who usually put up land alone—stretch the assumed value of their property to conform to the requirements of the equity. Instead the FHA rules that the equity shall not be less than the value of the land, thus leaving that equity at roughly one-fifth, and recompensing the equity holder according to the valuation placed on this contribution in relation to the total valuation of the project.

In general, the equity interest must present a financial set-up conforming to these standards:

1. The project should earn enough to produce a sum equivalent to about one and one-half times the fixed annual charges (interest, amortization, and mortgage insurance) on the proposed mortgage loan, this after deductions for operating expense, maintenance, reserves, and real estate taxes.

2. The point of default in the operation of the project must be less than 80 per cent of the gross earning expectancy. That is to say, the debt-service requirement plus all operating expenses—including maintenance reserves and all taxes excepting income taxes—should be less than 80 per cent of the total income of the project at 100 per cent occupancy. The higher the rentals as compared with average rentals in the community, the lower will be the allowable default ratio.

3. The principal amount of the loan should be below the total cost of producing the physical improvements to the land, including architects' and builders' fees.

So runs the new formula of the Large-Scale Housing Division. Implicit in it are two factors. In the first place, the Division is now and for the first time definitely out to get business instead of merely ready to do it. In the second place, it has baited its determination to get new business by making Large-Scale Housing more attractive both to the principal and the equity holder. But it has done this only by guaranteeing the good faith of all parties toward each other; and this in turn becomes a pledge of the Division's own good faith in enforcing that of others. To assure this good faith, the Division today is one of the most expert bodies in the New Deal. A change in personnel or a modification in policy would immediately render the entire program suspect, and having done so, would for the time destroy its value. For FHA Large-Scale housing insurance today is almost entirely an act of faith—faith that the Division can give back in quality what it has taken away in theoretical security from the investor.

YOU HAVE 50 ACRES of land on which you wish to put a big rental housing project. You think that if you can get the FHA to insure the mortgage, then you won't have much trouble getting the backing. This is what you do:

1. Submit the project on FHA Form 2013 in triplicate, filling it out completely, and, as chairman or director of the organization, signing it.

2. Accompany the form with duplicate legal descriptions of the property, plot plans, preliminary building plans, outline specifications, all identified and signed.

3. Meet by appointment the staff of the Large-Scale Housing Division for discussion of general financial, legal, real estate, construction, and architectural phases of the project. They are anxious to see you.

4. Sit by and watch while a docket of your case is opened, routine examination begun. The conclusions of the architectural, real estate, construction, and financial sections will then be submitted, with a consolidated recommendation, to the Board of Review.

5. Wait for the next weekly meeting of the Board of Review to act and transmit to you its final determination. Under the reorganized set-up, the whole procedure ought not to take more than two weeks.

Men. Having thus defined its administrative policy, the Large-Scale Division last month also revised its organization. Main purpose behind this reorganization was to equip the Division to go out for new business rather than simply to be able to receive it, to sell housing rather than merely to encourage it. This policy stems primarily from the interpretation placed on the motives of the FHA—that its prime purpose, aside from the emergency stimulation of Title I, is always to encourage new construction. But that it derives in some degree from the consideration that the more business the Division does the longer it can stay in business seems also a reasonable assumption.

Effective this month, the organization of the Large-Scale Housing Division will consist of the Director, the Executive Assistant, and four Sections, each Section under the direction of an Assistant Director.

Executive Assistant Martin J. Roess, Jr., in addition to continuing his duties as Counsel for the Division, under the direction of the General Counsel, will have charge of all general administrative mat-

ters coördinating activities, and the establishment and maintenance of procedure.

Assistant Director Eugene H. Klaber will have general charge of the conduct of the examination of projects, will be responsible for the assembling and summarizing of reports of the various Sections for presentation to the Board of Review, will have direct charge of the architectural and engineering examination of projects, and will negotiate with project architects with respect to the revision of plans and specifications.

Assistant Director James D. Dusenberry will be responsible for the estimating and checking of construction and improvement costs of all projects, will be responsible for the preparation of schedules of payment on contracts and approval of all contract requirements relating to construction and the conduct of work, will be in charge of the supervision of construction, and will be responsible for the checking of requisitions and the authorization of payments.

Assistant Director Cornelius Beard will have general charge of all matters relating to real estate analysis, will be responsible for the determination of rentals, income expectancy, operating costs, replacement reserves, real estate taxes and land and improvement valuations; will be responsible for bringing to the attention of the Architectural Section, the Financial Section, and the Construction Section any matters which bear upon the soundness of a project from the standpoint of real estate operation, and will have supervision of all functions reserved to the Administration with respect to the management of completed projects.

While he will have to deal in turn with each one of these men, the promoter of a housing enterprise will be happiest when he falls into the hands of Assistant Director Guy Greer. Under the new regime Greer will have charge of all promotional activities, will be responsible for the financial analysis of the projects submitted. He will determine the value of the sponsor's credit, the amount of equity he is to be allowed, and the amount of the mortgage to be granted.

Guy Greer was born 45 years ago in North Carolina, spent most of his early childhood in Pikeville, Ky., where his father was the local banker. Graduating from the University of Virginia in 1916, he went to work in his father's bank briefly before the War. During the Peace Conferences he served on the organization committee of the Reparations Commission as assistant to the late Col. James A. Logan, later wrote a book, "The Ruhr-Lorraine Industrial Problem" for the Brookings Institute, drawn from his experiences at this time. During the Twenties, he worked for Lee Higginson & Co., traveled some more in Europe negotiating bond issues, wrote a great deal on financial topics. From 1931 to 1934 he was a member of the research staff of the Federal Reserve Committee on Branch Banking.

He came to the FHA after a brief Government apprenticeship in the NRA, where he assisted in the ticklish task of organizing the code authorities. Since the demise of the Blue Eagle, he has been with the Large-Scale Housing Division of the FHA. Today his duties reflect his training; but the official memoranda fail to mention his largest and most significant task: in addition to performing as a one-man welcoming committee to the promoter of large-scale housing, Director Greer will also function as the financial wet nurse, drawing on his wide contacts to produce for the bright but penniless equity holder backing of the proper type from among the banks and insurance companies.

While the purpose of the Large-Scale Housing Division of the FHA may in a formal sense be to encourage construction, the purpose of its current realignment cannot be said to be simply the encouragement of still more construction. Its files are full of projects respectable enough for approval, and its growing prestige with the lending fraternity makes it a valued ally for any builder to have. Rather the new order marks a change of direction in the FHA policy.

First, it signifies that the FHA, and hence the New Deal, has at last decided to turn its attention to the rental field as worthy of development. More significantly, it means that the FHA has turned its talents to the problem of social housing. For such is the meaning of its announced intention to go out and get business. This search will be turned only to the nosing out of projects which show possibilities of low rentals—and by low, the FHA means rentals reaching down as low as $7.50 per room per month. Which is not, of course, to say that it will ignore the medium-priced project, but rather that it will increase the proportion of the lower rental type as rapidly as possible. That the advantages of FHA insurance alone can put such projects within the means of the private builder without the help of a subsidy is a conviction now lodged deep in the minds of FHA's chiefs. It depends, they think, on the type of housing proposed. Says Director Miles Colean:

"It must be emphasized that multi-story elevator buildings are not the only type of housing project, and that those projects composed of detached and group dwellings or of other kinds of unit which make possible the elimination of high operating costs are most sought after so far as we are concerned. Such projects can be successfully developed in almost any city to meet the demands of a great part of the 50 per cent of the urban population who are, by choice or circumstance, renters; and for whom, except for an extremely limited group, new housing has almost never been produced. In this field the market prospects, as well as the investment opportunities, at the present are almost unlimited."

20,000 HOMEOWNERS

shout and murmur for and against purchase.

Curious, the Northwestern Life Insurance Co., of Minneapolis, Minn., some time ago routed to 20,000 policy holders in 30 States a questionnaire to form the basis of a survey of home ownership. It proved primarily that the American home buyer has laudable motives. Fifty out of every 100 bought their first house to "have a better place to bring up the children." Sentiment, the longing to "have a home of our own," impelled the next greatest group to buy, with the investment motive running a poor third.

The average annual income reported by these groups was $2,452, the average value of home and lot, $4,899. Those families which got around to buying a second home spent about $1,000 more, or $6,000, on their new houses. But 58 per cent are still living in their first homes. Eleven per cent have lost them through Depression foreclosures.

The questionnaire left a roomy blank for "Remarks." Samples, which are both justifications for and complaints against buying a home:

"This home was built at the peak of inflation and is the only real foolish spending of any moment that I have ever done."

"Resolved never to raise my children in a rented home."

"Owning a home is a luxury and a cause of considerable grief. Taxes and the cost of repairs make it a luxury and the lack of zoning causes most of the grief."

"I am still in a puzzle. I paid $12,000 for my second home in 1917. In 1932 it was worth $3,300 (home loan valuation by U. S. Government), was taxed for $4,300 (city valuation), could sell for $6,000."

"Bought because I did not like the looks of a bunch of paid rent receipts."

"Consider I have gotten more value for money spent on my home than for any other money I have ever invested."

"Bought home in order to have something when we get older, but the way we get taxed here I think we will never own it clear."

"While it now appears just as cheap to rent a home as it does to own one, I will say that the only time that we ever seemed able to get ahead financially was during the time we owned and lived in our own home."

"Hope costs of building will not rise to such an extent that other families will find costs prohibitive, thereby losing happiness that only home ownership can bring."

"Wife insisted on purchase; bad judgment."

THE FIELD ESTATE: PORTFOLIO

How astute control, diversification will mean $200,000,000 to Marshall Field III in 1943.

"IT *is my will and I direct . . . that where real and personal property have been given in trust, a proper proportion be maintained between them. It has been my general intention to keep at least half of my property in real estate, and the rest in personal property; but in this particular my trustees are to exercise their own discretion and act in each case as may under such circumstance seem best to them.*"

So read the will, probated in 1906, by which Marshall Field I established the Estate of Marshall Field*. It was at that time disclosed that the Estate consisted of $83,459,032, of which $24,985,740, or a little less than one-third, represented downtown Chicago real estate holdings.

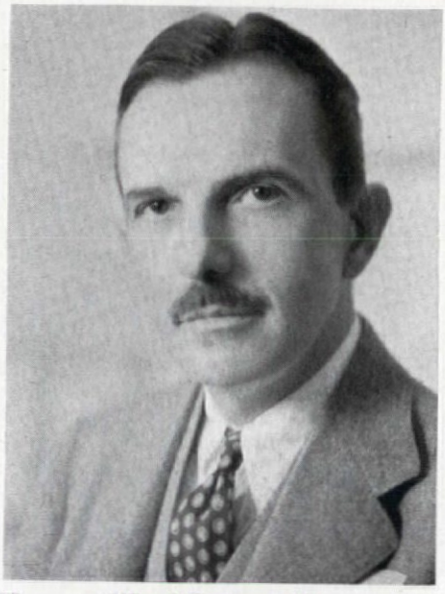
This Estate was bound up tight in a trusteeship for Grandson Marshall Field III, who will not gain control of it until his fiftieth birthday, September 28, 1943. Meanwhile it has prospered nicely. Depression estimates place its total value at $140,000,000, its real estate holdings at $100,000,000. Today, more than ever, the Estate of Marshall Field is a major factor in Chicago realty.

Last month the trustees of the estate wound up a two-year buying program involving an outlay of $10,000,000, specific practice of "their own discretion." Undertaken as a safe long time investment, the program was significant in that all the new properties lie outside the Loop in what the trustees deem to be coming neighborhood and suburban business centers.

The signboard for this operation was posted back in 1930. At that time foreclosure gave Managing Trustee George Adams Richardson several Loop properties which stood on Estate land. With money rates low, and securities uninviting, the trustees decided to rehabilitate their newest acquisitions. This flyer in Depression realty encouraged them, and they called on Ward Farnsworth, shrewd and experienced in Chicago real estate, to direct a more extensive program of realty acquisition.

Four hundred and sixty-two properties from Chicago and suburbs were therefore examined, 120 bid for, 37 bought. The new holdings spread out fanwise from the Loop, partially for diversification, partially because of more satisfactory extra-Loop prices. Fear of inflation played no part, was not even considered of sufficient importance for discussion in conferences on the program. Sole motive was the discovery of a sound investment in a bad market.

While properties in outlying business districts have been the chief concern of the past two years, the trustees still regard their Loop holdings as good investment, plan to add to them in the future. Whether this diversification will serve to evoke more qualms about "decentralization" remains a conjecture. Such an impressive real estate operator as Nelson A. Rockefeller has recently pontificated against this tendency, has backed up his fears with continued dead-center urban building. But no tumult among Chicago realtors can be discovered as a result of Field decentralization.



Manager Ward Farnsworth

Mr. Farnsworth's critical appraisal of Chicago realty has led him to put the bulk of his new properties in commercial holdings. Of the 31 new buildings, all were made up either of stores, shops, or offices, a few having also apartments, one a theater. Previous to 1934, the only Field property outside the Loop had been the definitely un-commercial Field Garden Apartments, a limited dividend corporation for which profit was no consideration. Inside the Loop, the properties are all commercial, including such landmarks as the great, white Field Building, the Conway Building (named after Marshall I's Massachusetts birthplace), the Pittsfield Building (named after the Massachusetts city which marked Marshall I's first job) and the land under Marshall Field and Co.'s store.

The fact that the Estate bought for two years has caused smaller operators to retire properties previously on the block. This stagnation alone has brought an end to the present program. Despite the fact that the size of recent operations has sent Chicago's Press scurrying for superlatives ("Largest single owner of downtown real estate at present," "most spectacular individual cash layout for real estate in the history of the city," etc., etc.), further purchases in the Loop and outside are envisaged.

Trustees for the Estate of Marshall Field are three. Marshall Field III, eventual beneficiary, succeeded to trusteeship upon the death of Arthur B. Jones, Marshall I's secretary. The second is the corporate trustee, which by constant merger through the years has evolved from the Merchants Loan & Trust Co. to the Illinois Continental Bank & Trust Co. But to George Adams Richardson as managing trustee should go all credit for personnel in general, and in particular for picking Ward Farnsworth as manager of the $10,000,000 buying program recently completed.

Manager Farnsworth entered real estate with Gordon Strong & Co. in 1922. When he left in 1930 he was in charge of all brokers for the company, is still director and second largest stock holder. In 1930 he left to manage the holdings of Utilities Power & Light Corp. When Utilities' President Harley L. Clark took over presidency of Fox Film Co., Farnsworth went with him to direct their 1,400-odd additional properties, helped them weather a three-year Depression storm. In 1933 he was called to take charge of the extra-Loop Field holdings, continues to administer them with a thoroughness belied by his nervous edge-of-the-chair tempo. The decentralization he has engineered for Field is echoed in his private life: once a confirmed urbanite, refusing to live north of Chicago's Water Tower, he is now completely suburbanized, living with his wife and two children on an estate in Lake Forest.

Another prophet of real estate's coming boom, he supports his contention by pointing to increased land and building costs and increased demands for space, maintains that the very properties included in the recent $10,000,000 program would currently fetch more that was paid for them. This last argument infers chances are good that on his fiftieth birthday Marshall Field III will be able to take a peek at his assets, come to the conclusion that he is better than two hundred times a millionaire.

* Not to be confused with Marshall Field & Co., which owns the store, and also "the world's largest office building," Chicago's mammoth Merchandise Mart.



Koopman-Robinson-Neumer





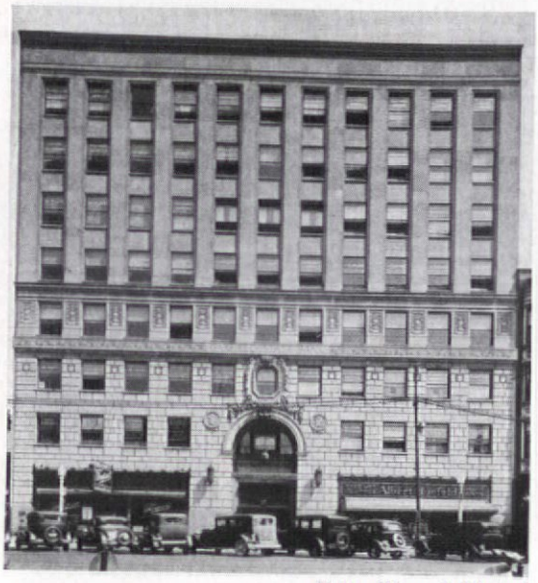
OLD properties are centered in the Loop, best example being the famed Field Building (above).



NEW properties are diversified in outlying Chicago and suburbs. Typical are those pictured, values being, in clockwise order starting at the top, $500,000; $1,200,000; $340,000; $750,000; $325,000; $310,000.







Photos, Chicago Architectural

THE DRUMS AND THE BUGLES

of astute publicity, from 1664's Sip Manor House to 1936's House Parade, sell land for Wychwood.

THE subdivider, so runs the adage, makes his money from land and not from the houses he puts on it. A logical extension of this adage is, of course, that houses, in the economy of real estate, should be nothing more than well-built sales gags, important only for the land they sell.

Last month in New Jersey a one-time organizer of the vegetable industry was rounding out his sixth and most successful season of land selling by just such a method: to him houses are literally no more than sales inducements, and very successful ones.

It was back in 1927 that Arthur R. Rule, general manager of Federated Fruit & Vegetable Growers, who lived near Westfield, N. J., was searching for some extra-agricultural business, and decided to develop a large area of land around his home. "Worthwhile fun" is the reason which his brochure ascribes to his subsequent operations; more likely the financial investment inherent in a carefully developed community project was closer to his original motive.

Developer Rule and his son, Arthur, Jr., gathered around themselves a staff of architects, arborists, community planners and landscapers, proceeded to lay out a "model" community. His attitude toward the project revealed a disparity from that of the traditional developer. He was less concerned with selling land by improving it than he was with selling it by advertising it. Attention, he felt sure, would bring buyers. Thus throughout the Depression he dug into his pocket for money to carry on an ambitious publicity campaign, firm in the belief that it was a prime factor in the sale of his land.

Wychwood, the name given by Mr. Rule to his development, is near Westfield, N. J., advertises that 45 minutes away is Manhattan's Broadway. Convenient for its community planning was its natural situation on a wooded, rolling terrain. Its old interlacing lanes, which later became chief arteries, also helped eliminate any suggestion of gridiron street layouts.

Starting with his 150 acres, Developer Rule installed utilities and landscaped. Then, instead of building model houses himself, he invited the confidence of a group of good builders and outlined a shrewd and enduring publicity program for those who hitched their wagons to the Wychwood star.

This publicity program was divided into two general parts. First came the historical series, then the current "modern" series. Opening move in the initial campaign in 1928 was the erection of "South Gate," a gingerbread fifteenth century set of gate houses which, Mr. Rule likes to say, has "whimsical tendencies."

Next came the transplanting of various old historical New Jersey residences to the development. The Sip Manor House, built in 1664, reputedly New Jersey's oldest home, was moved from Jersey City "with utmost secrecy." Newshawks "found" it one day in Wychwood, gave it as well as Wychwood quite a play. The Anza Ball Homestead, built in 1784, was also moved. The Scudder Homestead, already on the development from pre-Revolutionary days, was restored. More important, both were sold to enthusiastic clients, while the Sip House has been leased. In the fall of 1931 another historical coup attracted attention when a miniature near-replica of Poet Robert Burns' birthplace was opened. To heighten interest Mr. Rule had had it built under a tent.



Developer Rule

Not only historic houses, but furnishings and accoutrements of local color were added to Wychwood's growing list of color-with-a-purpose items. Strange bedfellows, Honest John Kelly, Manhattan's famed gambling house operator of a century ago, and former President James A. Monroe, have each willed unconsciously some of their characteristic furnishings. There is also a cigar store wooden Indian brought up from Louisville, Ky., where it had weathered the tornado of 1890 to the detriment of its nose.

On his staff of architects and landscapers, in addition to the chief, Bernhardt E. Müller, are such resounding names in modern architecture as Ernest Flagg, Dwight James Baum, J. André Fouilhoux, Lewis Bowman, Allmon Fordyce, William I. Hamby and William Wilde, while Olmsted Bros., Briggs & Stelling, and Henry Vaughn-Eames are consultants on landscaping and community planning. Evidence of their work as well as of Mr. Rule's orderly mind is the fact that there are five distinct units to Wychwood, each representing a group idea. There is an historical group, an English and Georgian group (ranging in price from $50,000 to $150,000), two hybrid groups ranging respectively from $15,000 to $30,000 and from $10,000 to $15,000. The fifth group provides a new departure, evincing a greater degree of paternalism than do the others. Named Wychwood Court, it consists of a hollow square of twelve houses, which face a landscaped garden. Each has been designed by a nationally known architect and falls within a price range beginning at about $7,000. While confining itself to advice elsewhere, the corporation has strictly supervised these plans.

In all, more than a hundred houses have been built in Wychwood since 1928, con-

	Dollar Volume of Sales (Building Lots Only)*
1927—Scudder Homestead restored.	
1928—South Gate built.	
1929—Sip Manor House moved from Jersey City.	
1930—Anza Ball Homestead moved to Wychwood, modernized.	
1931—"Wee Burns Cottage," replica of Robert Burns' birthplace.	$72,000
1932—Wonder Houses built simultaneously at Wychwood and in John Wanamaker's New York Auditorium.	$23,000
1933—Staged displays of model homes in vacated N. J. store windows.	$29,000
1934—Bought adjoining tract, held contest for name, sold out property in in little more than a year.	$34,000
1935—"Home Plan Center," a changing exhibit of scale models, small house plans opened in N. J. Central R. R. Union Terminal, N. Y. C.	$42,000
1936—The "1936-House Parade."	$78,000**

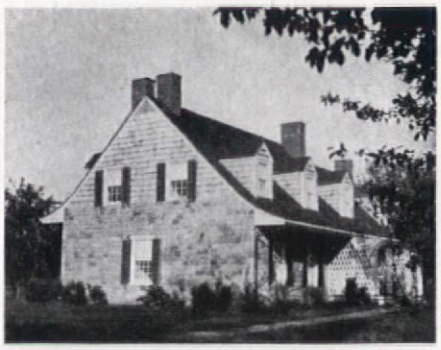
* Figures on Wychwood's sales volumes are available only from year of incorporation, 1931.

** 1936 figures are computed from actual sales, first six months, and estimated sales, last six months.

Sales Stunts into Dollars



1927: The Scudder Homestead



1929: The Sip Manor House

struction going on straight through the Depression even in the higher price range. Throughout the history of Wychwood, expert promotion has been regarded as the best magnet for buyers. Stressed has been the development's safeguarding of children from traffic through careful planning of arteries into lanes, cul-de-sacs, circles and courts.

Another sales angle was introduced in 1932 with the simultaneous construction of the "Wonder House" in the subdivision and in John Wanamaker's New York department store. This paved the way for the "1936-House Parade."

"House Parade," the latest of Mr. Rule's brain-children, is proving one of the lustiest. Engendered in January, it evinces a healthy respect for the theories of "model" modern architecture. Plans call for twelve houses, two of which already have been completed, with five others now in various stages of construction. Openings to the public are staggered conveniently throughout the summer and fall.

Impressive is the list of architects for these twelve houses. Two of the Fordyce & Hamby designs published in the January issue of THE FORUM are included, as are Dwight James Baum's *Good Housekeeping* House (see cut), two homes designed by Oakley & Son and sponsored by *McCall's*, a "Triple-Insulated Johns-Manville System House" designed by McMurray & Schmidlin, a house sponsored by *House Beautiful* and designed by John Floyd Yewell. Still to come are four houses designed by Frank Forster, John T. Carroll, John Floyd Yewell, and J. André Fouilhoux.

One of the Fordyce & Hamby's houses is being sponsored by L. Bamberger & Co., who will have furnished and decorated it.

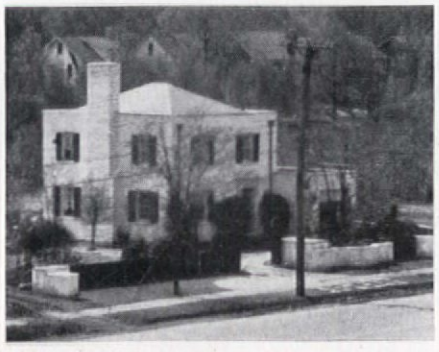
These exhibit homes are being carefully spotted throughout the subdivision. Although there are no prefabricated houses included in the display, nearly all exterior materials are demonstrated: asbestos, brick, stone, stucco, shingles, clapboards, precast concrete-stone units, cinder units. Some will use steel frameworks with cork insulations, others have as insulators rock wool, aluminum foil.



1930: The Anza Ball Homestead



1932: The Wonder House



1936: The "Good Housekeeping" House

FHA SPECIFICATIONS

for low-cost homes find builders in New Jersey and Washington.

ON Sunday afternoons last month hundreds of people made their way to New Market, N. J., to catch a glimpse of the first significant practice of a new FHA theory. Under the direction of Associate State Director George B. Underwood, 32 houses built according to the FHA low-cost specifications released three months ago (ARCH. FORUM, May, 1936, p. 432), were in various stages of construction.* Their prime importance lay in the fact that they were the lowest-priced private houses ever to receive Government backing.

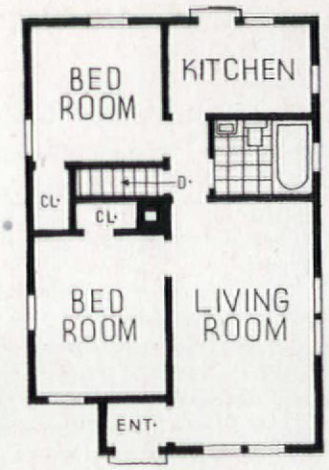
The FHA approved houses at New Market are built to sell, together with a plot 100 x 100 ft., for $2,595. Buyers pay $515 down, $19.82 in monthly installments. Director Underwood stresses the strictly experimental basis of the development, might well wish for happier results. A second Jersey development nearing completion this month promises considerable improvement.

¶In Washington, D. C., the National Lumber Manufacturers' Association, tired of too much prefabrication talk, was midway in another low-cost demonstration. Having chosen from FHA low-cost specifications types B, D, and E, Association contractors last month laid foundations for three model houses just over the District's line in Maryland, to be completed the middle of this month. Their prices are still approximate, but house, with basement, lot, and landscaping will sell for less than $3,500. They have broken down the cost of the D type house in detail, thus:

FHA cost with basement	$2,500
NLMA contract with basement	2,488
Contractor's profit	248
Lot cost (base)	525
Title, recording, deed, etc.	40
Sod, walks, shrubbery (not included by FHA)	50
	$3,351
Available FHA Loan	$2,800
Minimum down payment	595
Financing cost (additional charge to buyer)	125
Approximate monthly payment	25

Very frankly the NLMA set out on this program to publicize building in general and lumber in particular. Secondary purpose of these model homes is to demonstrate the logical role of lumber-in-prefabrication. As much as any one man behind the program is Richard Guy Kim-

*From an historical standpoint, the houses built according to these specifications by Long Island's Developer Frank Fox were first to go up, proved an abortive experiment.



Floor Plan: New Market

bell, curly-haired Director of Technical Services for the Association, one-time Chicago engineer who is rounding out his seventeenth year with the organization. It is his hope that, hearing of the project, people will seek out their local lumber dealers, start planning wood homes of their own.

CONSTRUCTION OUTLINE

FOUNDATION
Foundation walls—poured concrete to grade, cement blocks above. Cellar floor—3 in. concrete, 1 in. cement finish.

STRUCTURE
Exterior walls—4 x 6 in. sills, 4 x 4 in. plates, 2 x 4 in. studs, 16 in. o. c., sheathing, paper, cedar siding. Interior partitions—2 x 4 in. studs, 16 in. o. c., Johns-Manville insulation board, wall paper. Floor construction—2 x 8 in. beams, 16 in. o. c.

ROOF
Construction—2 x 6 in. rafters, 20 in. o. c., and sheathing, covered with asphalt shingles.

SHEET METAL WORK
Flashing, gutters, and leaders—copper.

WINDOWS
Sash—wood double hung. Glass—single strength. Screens—copper mesh, full size, wood frames.

FLOOR
All rooms except bathroom ⅞ x 3 in. yellow pine tongued and grooved. Bathroom—1 in. plain tile laid in cement.

WALL COVERINGS
All rooms have wallpaper on insulating board.

WOODWORK
Trim—clear white pine. Interior doors—white pine, 1⅜ in. thick; frames cypress.

PAINTING
Interior: Walls and ceilings—wall papered. Floors—filler and varnish. Trim and sash—filler and varnish or 2 coats paint. Exterior: Walls and sash—2 coats lead and oil.

ELECTRICAL INSTALLATION
Wiring system—BX cable.

KITCHEN EQUIPMENT
Stove—gas. Sink—42 in. combination sink and tub. Cabinet—wood.

BATHROOM EQUIPMENT
Lavatory and tub—iron enamel. Toilet—porcelain. Cabinet—wood.

PLUMBING
Soil, waste and vent pipes—cast iron. Water risers—brass.

HEATING
Pipeless furnace. Boiler—coal fired, Thatcher Co. Hot water heater—gas.

DIPLOMAS AT FORTY

is the goal of banker-students at A.B.A.'s graduate school.

During two weeks last month 400 bankers filed into the halls of Rutgers University at New Brunswick, New Jersey, sweated their diligent way through the second annual session of the Graduate School of Banking. Inaugurated last year under the auspices of the American Bankers Association, the school enrolled 220 for its maiden series, will in coming years be restricted to 600, represents the most recent and best action on behalf of adult education that the A.B.A. has made since its efforts began at the turn of the century with the establishment of the American Institute of Banking.

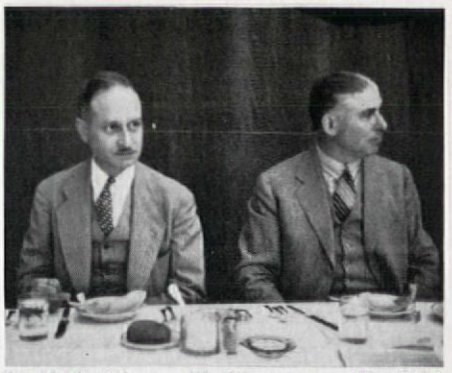
Goal of these hundreds of bankers, who include presidents, vice-presidents, one commissioner, is an exceptional one for men averaging more than 40 years of age: they work for a diploma. This, for the students, represents two-week sessions during three summers, specialization in a major subject, a thesis, extensive reading on allied subjects, monthly reviews, and, finally, a written and an oral exam.

Stressed in the two-week sessions were administrative problems and policies, credit extension, government securities, managerial and legal aspects, problems in the field of money and credit.

Lecturers included two seers: W. M. Kiplinger, who predicted 1940's entrenchment of a Third Party under one of the La Follettes, and Col. Leonard P. Ayres, who foresaw continued low interest rates. Other lecturers: Gilbert T. Stephenson of Wilmington, Del., on trust departments, Alexander Wall, of Philadelphia's Robert Morris Associates; George Barse, attorney for the Comptroller of the Currency, who spoke of the program followed in reopening banks after the holiday of 1933; Stuart P. Meech, professor in University of Chicago's School of Business, who deplored Government methods of tax assessment and collection; Dr. Harold Moulton, famed head of Brookings Institute, on the relation of banks and Government.

Students spent most time last month working hard during a day which might have been taken up with one hour at a major course, one hour on banking law, two hours on economics, two hours in evening seminars. There was little time for students to disport themselves in shorts.

So enthusiastic are students, so warm the response, that sponsors feel that the school will not lack for undergraduates for some years. Although no extension of the enrollment beyond 600 is practical, a widened range of courses is scheduled for students returning for their third and last year, which will include mortgage banking, affiliated subjects.



W. M. Kiplinger, Washington pundit (left), and *Banking's* Publisher Fred N. Shepherd.



Polite attention (7), engrossed interest (6), wool-gathering (2), frank boredom (1).



A.B.A.'s President Robert Fleming (left), and Irving Trust's Board Chairman Lewis E. Pierson.



Joseph Steinmetz

There was also tennis, a swimming pool, and a bar in the Hotel Woodrow Wilson.

LIMITED DIVIDENDS PAY

two building corporations enough to build again. Chatham Village and Celtic Park reviewed.

In January, 1935 The Architectural Forum presented a roll call of the major limited dividend housing corporations in the U.S., concluded that while every venture did not afford low rentals, almost every one afforded a substantial profit. Herewith the story of two of the housing corporations which showed enough profit in the interim to expand, earn more profit and more prestige for the Philanthropy That Pays.

City & Suburban. If, in 1896, you had been of a mind to invest some money in housing, you might have chosen City & Suburban Homes Co., a limited dividend corporation founded in that year by the late R. Fulton Cutting, then New York's First Citizen. You would have been proved a good picker. Last month finishing touches alone were required on the latest and greatest unit in City & Suburban's history, and the company was healthier financially than ever. For City & Suburban in spite of being a limited dividend corporation, is in business for money. Indeed, in 1922, Founder Cutting rumbled: "The current opinion that this company is a philanthropic institution is entirely erroneous. It was organized . . . on a purely business basis by practical men who . . . believed proper housing facilities could be provided for the public and a reasonable return paid to capital."

From the day that Architect Ernest Flagg won City & Suburban's first architectural competition in 1897, that organization has grown steadily, pushing up seventeen apartment buildings in Manhattan, one apartment building and 248 houses in Brooklyn. High prices stopped construction in the Twenties, and it was not until 1931 that it was resumed—with Celtic Park, a Queens development. Last month it was the completion of the fourth project in this development which gave cause for City & Suburban self-congratulations.

At present, including the newest unit, Celtic Park comprises seven units, 402 apartments, 1,677 rooms. Each of the units is a six-story elevator apartment building, conforming to city-block layout, facing in on quadrangles. The central courtyards are neatly laid out, landscaped.

Celtic Park is chiefly the work of Architect George W. Springsteen, who has had a hand in the designing of the last three units, did the last two single-handed. Few innovations have been made in the last unit. Experience taught the value of such minor sales inducements as colored tiles in place of white in the bathrooms; heat control was added to the kitchen ranges; gradually the rooms have been getting a little larger. The rent schedule has been boosted to discourage lessees in old units from moving to the new. And City & Suburban has decided that the five-room apartment is too costly an investment, has discontinued them.

Varying slightly with height and location, the two-and-one-half room apartments rent at an average of $45, the three-room apartments $50, the four-room apartments $62. This schedule is on the basis of a one-year lease; the schedule drops $2 or $3 if the length of lease is increased.

City & Suburban's capital stock, fixed in 1896 at $1,000,000, has subsequently increased until at present an issue of $6,000,000 has been authorized, $4,255,690 actually issued. Its surplus, as of April 30, 1936, allowing for depreciation and taxes, is set at $1,200,000 and this after building operations had sliced nearly $200,000 from the 1931 surplus. Book value of land and

ITEM	Project No. 1 (Unit "A")	Project No. 2 (Units 1-2)	Project No. 3 (Units 3-4)	Project No. 4 (Units 5-6)
Number of Apartments	117	114	127	134
Number of Rooms	436	406	409	426
Number of Closets	378	359	395	452
Area of Land	28,500	28,500	28,502	28,607
Area of Building	15,737	14,962	15,074	15,483
Coverage	55.2%	52.5%	53%	54%
Average Room Size (Gross)	221.6	233.7	235.5	242
Efficiency Ratio	80%	84%	84.8%	86.2%
Cubage	1,129,326	1,180,833	1,157,810	1,210,200
Number of Stairways	5	4	4	4
Number of Apts. per Stairway	23.4	28.5	29	33.5
Number of Rooms per Stairway	86.4	101.5	102.4	106.5
Perimeter	1,233'10"	1,051'8"	1050'	1004'10"
Perimeter per Room	17.37'	16.43'	16.4'	15.7'
Average Area of Rooms (Net)				
Living Room	178.9	177.5	176.1	177.3
Bedroom	143	140.8	142	143.6
Kitchen	84.6	95.6	97.4*	104.1*
Dining Room	136.8	157.6	--	--
Area of Private Halls	2,312.9	4,106.3	3,925	3,450
Area of Foyers	5,388.1	6,945.8	6,388	7,815
Area of Closets	2,514.3	3,168.8	3,086	3,723
Net Rentable Area (per floor)	12,732.5	12,587	12,770	13,352
Number & Percentage of 2½-Rm Apts	--	--	24/18.9%	28/20.9%
Number & Percentage of 3-Rm Apts	43/37.0%	62/54.5%	63/49.6%	68/50.8%
Number & Percentage of 4-Rm Apts	63/54.0%	40/35.0%	40/31.5%	38/28.3%
Number & Percentage of 5-Rm Apts	11/ 9.0%	12/10.5%	--	--

**This figure based on two ½-room Kitchens counted as one.*

Growth in Assets, Income, Expenses, and Net Earnings of the City & Suburban Homes Company, 1924-1936

Year	Assets	Income	Expenses	Net Earnings (div. and surp.)
1936	$9,998,764	$1,175,760	$1,103,278	$ 72,481
1935	9,976,560	1,127,204	1,024,751	102,452
1934	9,904,394	1,084,605	962,906	121,700
1933	9,880,174	1,227,869	964,264	263,606
1932	9,740,431	1,335,975	938,427	397,547
1931	9,509,728	1,345,889	931,739	414,149
1930	9,688,313	1,348,848	906,489	445,079
1929	8,954,284	1,332,233	892,711	439,522
1928	8,661,943	1,296,659	881,229	415,429
1927	8,460,640	1,247,108	831,152	415,956
1926	8,643,930	1,242,565	891,322	351,243
1925	8,489,934	1,126,775	805,150	321,624
1924	7,636,472	1,204,671	900,295	304,376

A Breakdown of Celtic Park in Dollars and Feet



© Aerial Surveys of Pittsburgh



Chatham Village from the air displays the modern community plan whose houses turn their backs to the streets. From the ground (above) it shows careful landscaping and row houses.

buildings is upwards of $9,900,000, has increased steadily. Its yearly gross income, listed in the table on page 159, averaged over $1,125,000 through the Twenties.

If an investor were at all inclined to be worried about the drop in the last twelve months' net earnings, he would need only study his income and expense statement to reassure himself by finding that the company's properties earned $306,000 (3.2 per cent), after all operating charges, taxes, insurance, repairs, and replacement had been deducted. Of this amount, $74,000 was needed for interest on money heretofore borrowed on mortgages, for use in developing and acquiring properties. The balance of $232,000 represents earnings of nearly 5.5 per cent on outstanding capital stock. Foresight has allocated $160,000 more of this total to a reserve fund thus swelled to $2,740,000 (36 per cent of the book value of the buildings), against the eventual loss of the properties' useful value.

Chatham Village. If 1896 was the year to buy City & Suburban, 1931 was the year to get your name down on Chatham Village's list. Chatham Village is the Buhl Foundation's $1,550,000 limited dividend housing project on a hilltop just across the Monongahela from Pittsburgh's Golden Triangle, and it has been better than 97 per cent productively occupied since it opened in early 1932. Last month the last tenants of its latest $550,000 addition had just moved in, pushed occupancy to 100 per cent.

The first unit was an application of the row house principle to Pittsburgh's hills. Solidly brick-built, set in simple staggered lines which make a long oval, they are the best thought of Pittsburgh's Architects Ingham & Boyd, steered considerably by the housing experience of famed Clarence Stein and the late Henry Wright. Allocation of houses depended to an extent on big trees already growing, which are now part of an elaborate landscaping design. The Village is a planned community, with an athletic field, tennis courts, a club, a supervised playschool, a 25-acre woodland carefully laid out into trails, picnic-grounds.

Proud of their handiwork should be the directors of the Village. For, when plans were organized for the 68-house unit recently completed, they made an exhaustive search for possible innovations, were forced to decide that the first job had been done well enough to serve as a model for subsequent units. True, another basic type was added to answer a demand for a larger house, and the arrangement of lighting (with underground wiring) was improved to mask glare with shrubbery, protect sleepers. But by and large, the second unit is no more than an extension of the first. With six basic types of houses, including three of a two-bedroom house in five sizes, two of the three-bedroom house, and one with four bedrooms, two baths, Village architects can now offer more than 25 combinations, through adaptation to grade conditions, etc.

Nor does the second unit represent any change in rent schedule. Financial aim and basis for rent is a net 5 per cent above all charges, including amortization and maintenance reserves. Chatham Villagers today pay from $47.50 to $87 for houses varying in size from five to nine rooms.

Breaking down the Chatham Village rent dollar, you find that 20 cents goes for taxes, 17 for house and garden maintenance, 11 for management, insurance and contingencies, 11 for amortization, while 41 becomes net yield. Rents are based approximately on 1 per cent per month or 12 per cent per year gross on the total investment, coming to about $103,000. Deposit in the amortization fund is at the rate of 1½ per cent of the total building cost, with what is earned as interest added and compounded semi-annually at an annual rate of 4½ per cent. This method will pay off the fund in approximately 31 years.

Most vivid token of the Village's value as a long-term economic investment is its occupancy table:

Year beginning May 1, 1932—	97.5%
" " " ", 1933—	99.1%
" " " ", 1934—	99.8%
" " " ", 1935—	100.0%
" " " ", 1936—	100.0%

Every home in the second unit was rented on or before the first week in February, 1936, over three months before occupancy, leaving hundreds who could not be accommodated.

PUBLIC HOUSING ENDS

as PWA retires from the field leaving a $130,000,000 legacy.

"A NATIONAL demonstration program" is the phrase which the Housing Division of the Public Works Administration finally hit on to describe its activities in the residential construction field. Last month it used this phrase in announcing that its program was completed, its demonstration over, its activities confined to those now on the books. For a listing of these projects and their current status, see the opposite page.

¶ There are fifty projects in 35 cities, and two insular possessions. The total value is $130,000,000, or $2,600,000 a project. ¶ The program provides housing for 25,000 families, which means that the average cost of housing one family is over $5,000. ¶ Administrator Ickes' home town of Chicago got the largest number of projects (4), the second largest appropriation ($16,200,000). To New York City went $17,033,000. The biggest single projects went to New York ($12,333,000) and to Cincinnati ($6,500,000). Biggest number of contracts to one State was five to Ohio.

PUBLIC WORKS ADMINISTRATION HOUSING—FINAL DISPOSITION

LOCATION	NAME	TYPE	SIZE	COST	CHIEF ARCH'TS.	CONTRACTORS	STATUS
Atlanta, Ga.	Techwood	Three-story apartments, two-story group houses, three story dormitory, stores and garages	604 living units; 109 dormitory units; 25 acres	$3,101,500	Burge & Stevens	J. A. Jones Construction Co.	Work proceeding
Atlanta, Ga.	University	Two and three- story group houses and flats; stores and garages	675 living units; 19 acres	2,500,000	Edwards & Sayward	N. P. Severin Co.	Work proceeding
Atlantic City, N. J.	Stanley S. Homes Village	Two and three-story flats and group houses	277 living units; 8 acres	1,700,000	Mathis, Smith & Turon	John McShain, Inc.	Work proceeding
Birmingham, Ala.	Smithfield Court	One and two-story group houses and three-story apartments	664 living units; 28 acres	2,500,000	D. O. Whilldin	Southern Construction Co.[3]	Work proceeding on foundations
Boston, Mass.	Old Harbor Village	Three-story apartments, two-story group houses	1,016 living units; 33 acres	6,000,000	J. D. Leland	New England Foundation Co. & C. J. Maney Co., Inc.[3]	Bids rec'd on superstructure
Buffalo, N. Y.	Kenfield	One and two-story group houses; two and three-story flats	658 living units 65 acres	4,500,000	Chester Oakley	John W. Cowper Co.[3]	Bids rec'd on superstructure
Cambridge, Mass.	New Towne Courts	Three-story apartments	294 living units; 9 acres	2,500,000	Henry C. Robbins	M. Spinelli & Sons Co., Inc.[3]	Work proceeding on foundations
Camden, N. J.	Westfield Acres	Three-story apartments	598 living units; 25 acres	3,000,000	J. N. Hettel	Turner Construction Co.[3]	Work proceeding on foundations
Charleston, S. C.	Meeting St. Manor Cooper River Court	One and two-story group houses	272 living units; 16 acres	1,500,000	Samuel Lapham, Jr.	Tidewater Construction Co.[3]	Bids rec'd on superstructure
Chicago, Ill.	Jane Addams Houses	Three-story apartments, two-story group houses	304 living units; 6 acres	1,950,000	John A. Holabird	S. N. Nielsen Co.	Work proceeding on superstructure
Chicago, Ill.	Jane Addams Add'n	Three-story apartments, two-story group houses	677 living units; 18 acres	5,000,000	John A. Holabird		Demolition proceeding
Chicago, Ill.	Julia C. Lathrop Homes	Three-story apartments, two-story flats and group houses	975 living units; 35 acres	6,000,000	Robert S. DeGolyer	Mid-West Construction Co.[3]	Work proceeding on foundations
Chicago, Ill.	Trumbull Park Homes	Two-story group houses and flats, four-story apartments	462 living units; 21 acres	3,250,000	John A. Holabird	Henry Ericsson Co.[3]	Work proceeding on foundations
Cincinnati, Ohio	Laurel Homes	Three- and four-story apartments	1,279 living units; 24 acres	6,500,000	Frederick W. Garber	Torson Construction Co.[3]	Work proceeding on foundations
Cleveland, Ohio	Cedar-Central Apts.	Three-story apartments	654 living units; 18 acres	3,279,000	Walter R. McCornack	George A. Fuller Co.	Work proceeding
Cleveland, Ohio	Outhwaite Homes	Three-story apartments, two-story flats and group houses	579 living units; 21 acres	3,650,000	Maier, Walsh & Barrett	George A. Fuller Co.	Work completed on foundations
Cleveland, Ohio	Unnamed	Three-story apartments, two-story group houses	620 living units; 22 acres	3,800,000	Joseph L. Weinberg	Madsen Construction Co.	Work proceeding
Columbia, S. C.	Columbia Terrace	One and two-story group houses; two and three-story apartments	142 living units; 4 acres	500,000	James B. Urquhart	M. B. Kahn Construction Co.[3]	Bids rec'd on superstructure
Dallas, Texas	Cedar Springs Place	One and two-story group houses, two-story apartments	181 living units; 22 acres	900,000	Walter C. Sharp	P. Montgomery[3]	Work proceeding
Detroit, Mich.	Brewster	Three-story apartments, two-story group houses and flats	791 living units; 28 acres	5,500,000	George D. Mason	Cleveland Wrecking Co. and Detroit Bldg. Material Co.[1]	Bids rec'd on foundations
Detroit, Mich.	Parkside	Three-story apartments, two-story group houses	779 living units; 31 acres	4,500,000	George D. Mason		Work proceeding on foundations
Enid, Okla.	Cherokee Terrace	One and two-story group houses	90 living units; 5 acres	435,100	George Blumenauer	D. C. Bass & Sons Construction Co.[3]	Foundation contract awarded
Evansville, Ind.	Lincoln Gardens	One and two-story group houses and flats	195 living units; 11 acres	1,000,000	Edward J. Thole	A. J. Ryan & Sons[3]	Foundation contract awarded
Indianapolis, Ind.	Lockefield Garden Apts.	Three-story apartments, two-story group houses	748 living units; 22 acres	3,025,000	Wm. E. Russ & Merritt Harrison	N. P. Severin Co.	Work proceeding
Jacksonville, Fla.	Durkeeville	One and two-story group houses	239 living units; 20 acres	1,000,000	M. C. Greeley	N. S. Baird, Inc.[3]	Work proceeding on superstructure
Lexington, Ky.	Blue Grass Park-Aspendale	One and two-story group houses, two-story flats	268 living units; 68 acres	1,500,000	Hugh Meriwether	Gilson-Taylor, Inc.[3]	Bids rec'd on superstructure
Louisville, Ky.	La Salle Place	One and two-story group houses	210 living units; 14 acres	1,200,000	E. T. Hutchings	Henry Bickel Co.[3]	Bids rec'd on superstructure
Louisville, Ky.	College Court	One and two-story group houses, two-story flats	125 living units; 5 acres	700,000	E. T. Hutchings	J. U. Schickli & Bros., Inc.[3]	Bids rec'd on superstructure
Memphis, Tenn.	Dixie Homes	One and two-story group houses, two-story flats, gallery apts.	743 living units; 42 acres	3,200,000	J. Frazer Smith	S. & W. Construction Co.[3]	Bids rec'd on superstructure
Memphis, Tenn.	Lauderdale Courts	One and two-story group houses, and three-story apartments	469 living units; 26 acres	3,000,000	J. Frazer Smith	S. & W. Construction Co.[3]	Bids rec'd on superstructure
Miami, Fla.	Liberty Square	One and two-story group houses	243 living units; 62 acres	1,000,000	P. E. Paist & Associates	Walter Butler Co.	Work proceeding
Milwaukee, Wis.	Parklawn	Three story apartments, two-story flats, one and two-story group houses	518 living units; 42 acres	2,800,000	Gerrit J. De Gelleke	George A. Fuller Co.	Work proceeding
Minneapolis, Minn.	Sumner Field Homes	Three story apartments, group houses, flats	613 living units; 32 acres	3,500,000	Wilbur H. Tusler	Johnson, Drake & Piper[3]	Work proceeding on foundations
Montgomery, Ala.	Riverside Heights	One and two-story group houses	100 living units; 14 acres	403,000	Ausfeld & Jones	T. L. James & Co.	Work proceeding
Montgomery, Ala.	Wm. B. Paterson Courts	One and two-story group houses	158 living units; 7 acres	472,000	Carl B. Cooper & Moreland G. Smith	T. L. James & Co.	Work proceeding
Nashville, Tenn.	Cheatham Place	One and two-story group houses	332 living units; 22 acres	1,700,000	Richard R. Clark	V. L. Nicholson Co.[3]	Bids rec'd on superstructure
Nashville, Tenn.	Andrew Jackson Courts	One and two-story group houses and two-story flats	383 living units; 20 acres	1,500,000	Richard R. Clark	Bush Bdlg. Co.[3]	Foundation contract awarded
New York, N. Y.	Ten Eyck Houses	Four-story walk-up apartments	1,614 living units; 26 acres	12,153,000	R. H. Shreve	Wallin Concrete Corp.[3]	Work proceeding on foundations
New York, N. Y.	Harlem River Houses	Four and five-story walk-up apartments	574 living units; 9 acres	4,700,000	A. M. Brown	Carleton Co., Inc.[3]	Work proceeding on foundations
Oklahoma City, Okla.	Will Rogers Court	One and two-story group houses	389 living units; 37 acres	2,000,000	J. O. Parr	Leo Sanders[3]	Work proceeding on foundations
Omaha, Neb.	Unnamed	One and two-story group houses; two-story flats	326 living units; 20 acres	2,000,000	W. L. Steele	Amer. Lumber & Wrecking Co.[1]	Bids rec'd on foundations
Philadelphia, Pa.	Hill Creek	One and two-story group houses, two-story flats, three-story apartments	325 living units; 24 acres	1,800,000	W. H. Thomas	Wark & Company[3]	Bids rec'd on superstructure
Schenectady, N. Y.	Schonowee Village	Three-story apartments; two-story flats	286 living units; 9 acres	1,500,000	R. L. Bowen	Hanrahan Bros.[3]	Work proceeding on foundations
Stamford, Conn.	Fairfield Court	Three-story apartments, one and two-story group houses	154 living units; 5 acres	980,000	Wm. J. Provoost	Frank Palmer[3]	Bids rec'd on superstructure
Toledo, Ohio	Unnamed	Three story apartments, two-story group houses and flats	373 living units; 16 acres	2,000,000	Harold Munger	Cleveland Wrecking Co.[1]	Bids rec'd on foundations
Virgin Islands, Christiansted	Unnamed	One-story group houses	30 living units; 5 acres	41,800	H. I. Hettinger 2		Demolition, construction contracts being let
Virgin Islands, Frederiksted	Unnamed	One-story group houses	40 living units; 17 acres	56,900	H. I. Hettinger 2		Construction contract let
Virgin Islands, St. Thomas	Unnamed	One-story group houses	76 living units; 14 acres	98,500	H. I. Hettinger 2		Construction contract let
Washington, D. C.	Langston	Two-story flats and group houses, and three-story apartments	317 living units; 14 acres	1,600,000	Robinson, Porter & Williams	Chas. H. Tompkins Co.[3]	Work proceeding on foundation
Wayne, Pa.	Highland Homes	One and two-story group houses, two-story flats	50 living units; 2 acres	300,000	H. Bartol Register	McCabe Bros.[3]	Bids rec'd on superstructure

1. Denotes wrecking contractors. 2. Denotes district manager. 3. Denotes foundation contractors.



FIVE COOKS BREW

a good broth: less-than-$5,000 homes for an up-State town.

CONFOUNDING the pundit who insists that the U. S. cannot produce a good less-than-$5,000 house has become an increasingly popular outdoor game with developers. Last month a new and neat demonstration in this price class was modestly nearing completion in Williamsville, a quiet northern New York State community.

Williamsville's Bank of Williamsville, found itself, year and a half ago, the somewhat unwilling owner of two divisions of land on the skirts of the town. Fortunate in having for its president a onetime contractor, Albert H. Meyer, formerly of nearby Buffalo's firm of Meyer & Meyer, the Bank readily came to realize the necessity of developing the land in order to liquidate.

Unusually manifold was the arrangement thereupon established. The C. & M. Construction Co. was formed by the bank, and Engineers Senior, Fretts & Tallamy, of Williamsville were engaged to layout the subdivision. The architectural firm of W. G. Lanphear & Son and Pearce & Pearce, Realtors, completed the operating set-up. Five hands proved not too many to spoil a broth which consisted of individually designed houses for $3,400 and $4,400 exclusive of land, price depending upon the buyer's choice from one of two basic plans.

The offerings lay in two general fields, changes within these fields stemming from individual needs and specifications. Williamsville's low-salaried worker could choose either a three-level house, with part cellar, on a lot 50 x 190 ft., at $3,400, or a two-story house, with full cellar, on a lot 100 x 200 ft., at $4,400. Skin treatments, reversing, and changing the location of the house on the lot served to lend the developments the necessary cachet of suburban individuality. Interiors revealed the same thematic variations, the architects interchanging rooms or varying their sizes within a 21,250 cu. ft. limit.

Last year 69 houses were built and sold. This year the Huxley Drive section of 53 lots has rolled smoothly toward completion, with the realtors assured of total occupancy by the middle of September.

Architect Walter G. Lanphear graduated in 1904 from Columbia's Graduate School of Architecture, served an apprenticeship with Manhattan's famed McKim, Mead & White. Today he runs his own office in Buffalo, specializes in small apartment houses and subdivision developments. Making smart use of the base plan technique, he has in the last eighteen months designed the respectable total of 125 homes, all priced below $5,000.



Price: $4,400

CONSTRUCTION OUTLINE

FOUNDATION
Walls—8 in. concrete block, plastered.
STRUCTURE
All rough lumber full size undressed. Sheathing—½ in. rigid insulating board. Exterior—clapboards. Interior—rock lath and 2 coat plaster.
ROOF
Construction—2 x 6 rafters, ⅞ in. roof board, building paper and 210 lb. asphalt strip shingles, Philip Carey Co.
SHEET METAL WORK
Flashing, gutters and leaders—copper bearing galvanized iron.
INSULATION
½ in. rigid insulating board on walls and roof.
WINDOWS
Sash—wood double hung and casements. Glass—Libbey-Owens-Ford Glass Co.
FLOORS
⅜ in. oak, square edge. Kitchen and bathrooms—Sealex linoleum, Congoleum-Nairn, Inc.
WALL COVERINGS
Washable wall paper. Kitchen and bathrooms—Sealex linoleum in $4,400 house; Keene cement or painted plaster walls in $3,400 house.
ELECTRICAL INSTALLATION
BX cable. Fixtures—direct and indirect, built-in for kitchen and bath.
KITCHEN EQUIPMENT
Sink—one piece porcelain enameled steel, Briggs Mfg. Co. Cabinet—custom built.
LAUNDRY EQUIPMENT
Sink—2 part laundry tray.
BATHROOM EQUIPMENT
Lavatory—companion type, Standard Sanitary Mfg. Co. Tub—Briggs Mfg. Co. Toilet—Standard Sanitary Mfg. Co. and Crane Co. Seat—Church Mfg. Co.
HEATING AND AIR CONDITIONING
Warm air. 20 per cent of houses have winter air conditioning, with filters, dome humidifier and blower. Boiler—coal fired, Richardson & Boynton Co. Hot water heater—automatic, Ruud Mfg. Co.

A BUILDING CRASH

kills 18 in New York, highlights an experiment in precaution.

ONE sultry midafternoon last month, the center wing of an apartment house in New York's sprawling Bronx collapsed, crashing six stories to the ground. In the débris were pinned or crushed over a score of men, the death list mounting gradually to eighteen.

The topping out ceremony had been attended, three days before the collapse, by scores of business men and city officials,

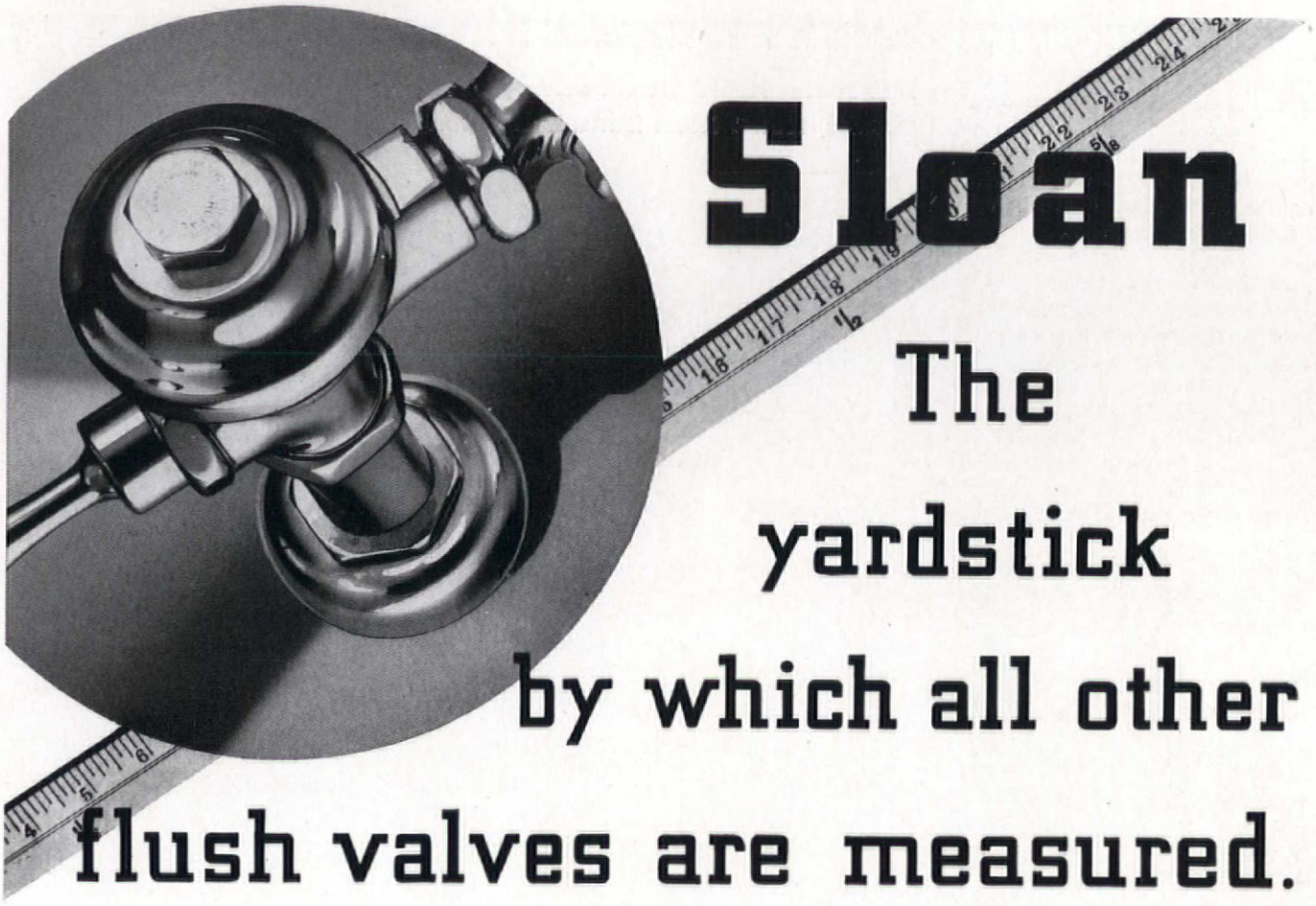


International News

Diagnosis: "Speed Up"

celebrating the near-completion of the Bronx's first all electrically equipped apartment unit. On that occasion Contractor Louis Steinberg ran up the traditional American flag, complimented the force of workmen on the fact that there had not been a single injury since construction began in early May.

(Continued on page 164)



Sloan

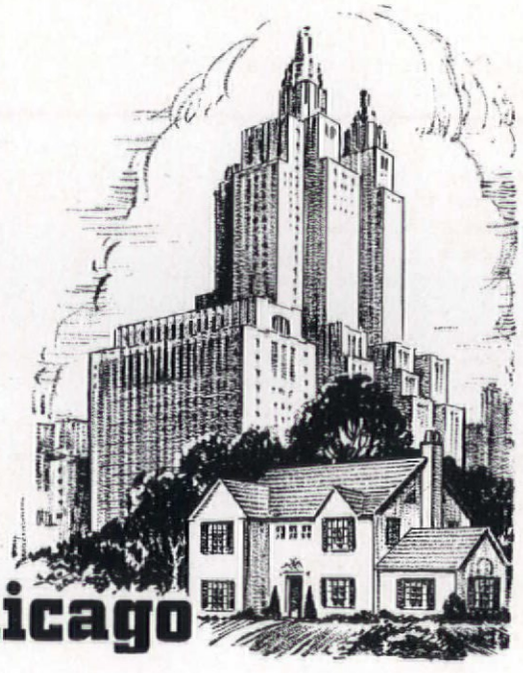
The yardstick by which all other flush valves are measured.

WHEN you hear the phrase "as good as SLOAN," think what a sincere compliment it is to SLOAN Flush Valves to be taken as the standard of comparison. And the compliment is actually paid daily in act as well as word, for more SLOAN Flush Valves are made and sold throughout the world than all other makes combined.

Such universal preference for SLOAN could not be accidental, and it is not. Every SLOAN Flush Valve is the result of thirty years' experience devoted to the manufacture of flush valves exclusively —experience accumulated not alone as an organization, but in the records of scores of long-time employees as well. The average individual length of employment for the entire main office and plant is 11 years, and for the five principal members of the engineering staff 21 years.

Small wonder that SLOAN Flush Valves, constantly improved by skilled research, continue year after year to be the yardstick by which all other flush valves are measured—especially when you remember that SLOAN Flush Valves cost no more than other, less popular valves.

firsts by SLOAN that have set the pace for 30 years: first diaphragm type flush valve; first tilting relief valve; first can't-be-held-open valve; first use of oscillating handle; first seat-operating flush valve; first use of Monel Metal for vital parts; first no-moving-part vacuum breaker; first non-return stop; first leak-proof, free-flow, quiet vacuum breaker; first use of moulded double cups on piston valves.



SLOAN VALVE CO., Chicago

(Continued from page 162)

In the wake of the crash no less than six investigations were launched, established little but suspicions and suggestions.

Labor's Local Bricklayers Unionman Jacob Mirsky: It was due to inadequate inspection. Bricklayers have frequently been discharged because of their complaints about inferior materials.

The Dow Service: Architectural supervision should be required on every building project, and the architect should have full power to accept or reject suggested changes in plans and specifications, approve general contractors and subcontractors.

New York's Mayor Fiorello H. LaGuardia, in a form letter composed to answer the deluge of post-tragedy correspondence flooding his office: A central



International News

Extreme Unction

city-wide building department should be set up, where there would be sufficient latitude to have proper supervision and preventive work as well as power of investigation to ascertain negligence.

Engineering experts, afforded samples of the débris by the ever-crusading *World-Telegram*: Too much lime was used in the mixture of the bricks, a technique evolved to make bricks easier to work with, enabling a workman to lay as high as 25 per cent more per day.

The Bricklayers, Plasterers & Masons International Union, which supplied names of eleven workmen who later testified to the same effect: A 'speed-up' policy was inaugurated, presumably to fit in with moving-day, October 1. This directly affected quality of work, indirectly caused the collapse. Also, 'second-hand' bricks, at least 50 per cent of which were not cleaned, were used in the construction of the walls.

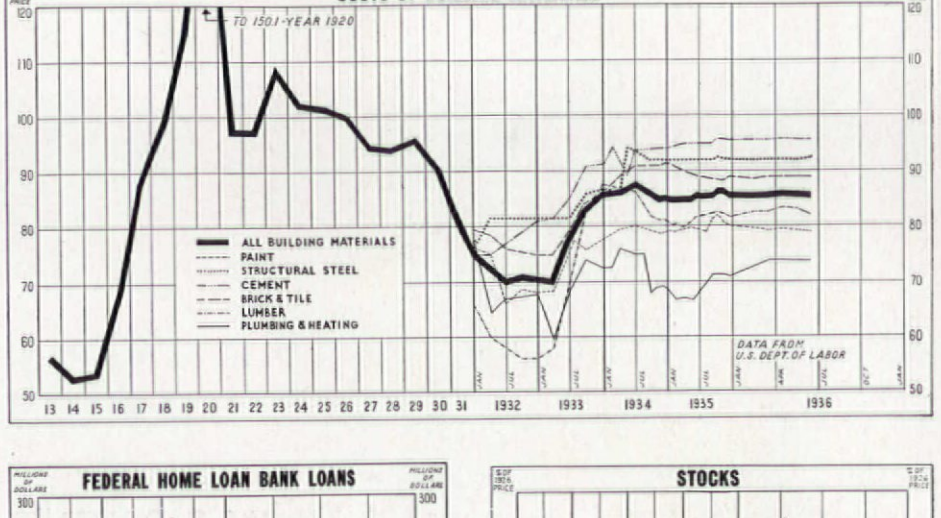
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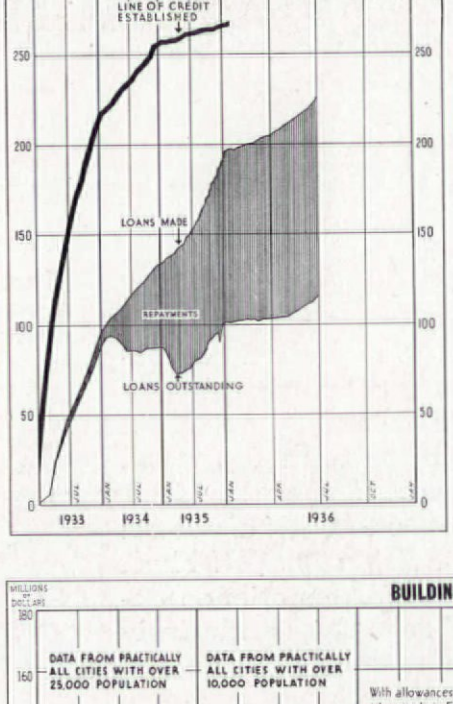
Still sanely progressive, Brooklyn's Group Five Mortgage Information Bureau, now over two years old, (ARCH.

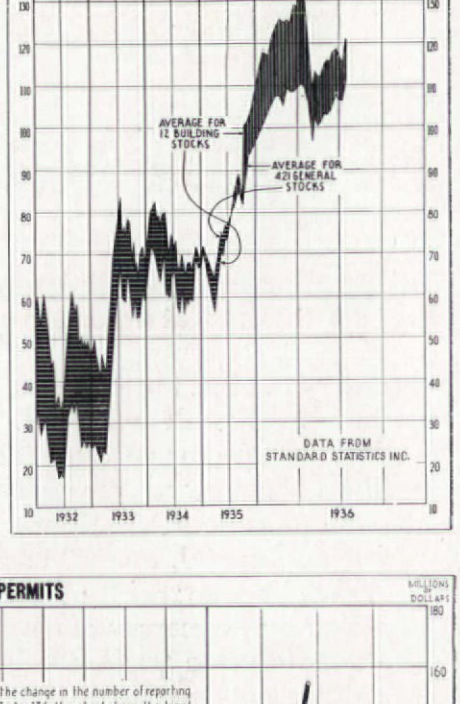
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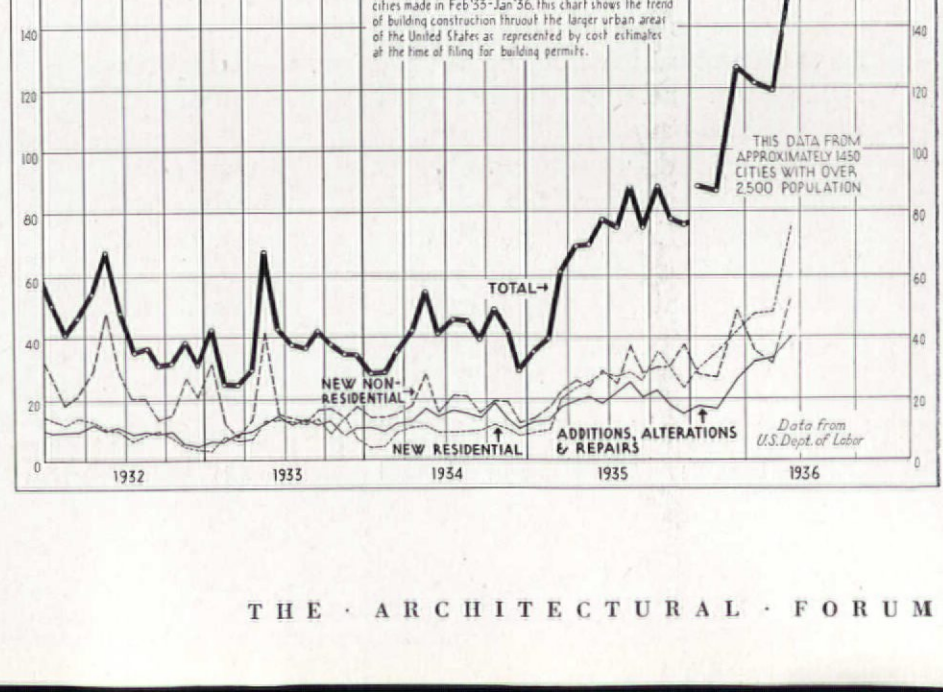
EVERYTHING UP

but costs. Residential building soars to five-year high. Stocks, Home Loan Bank loans climb slowly.



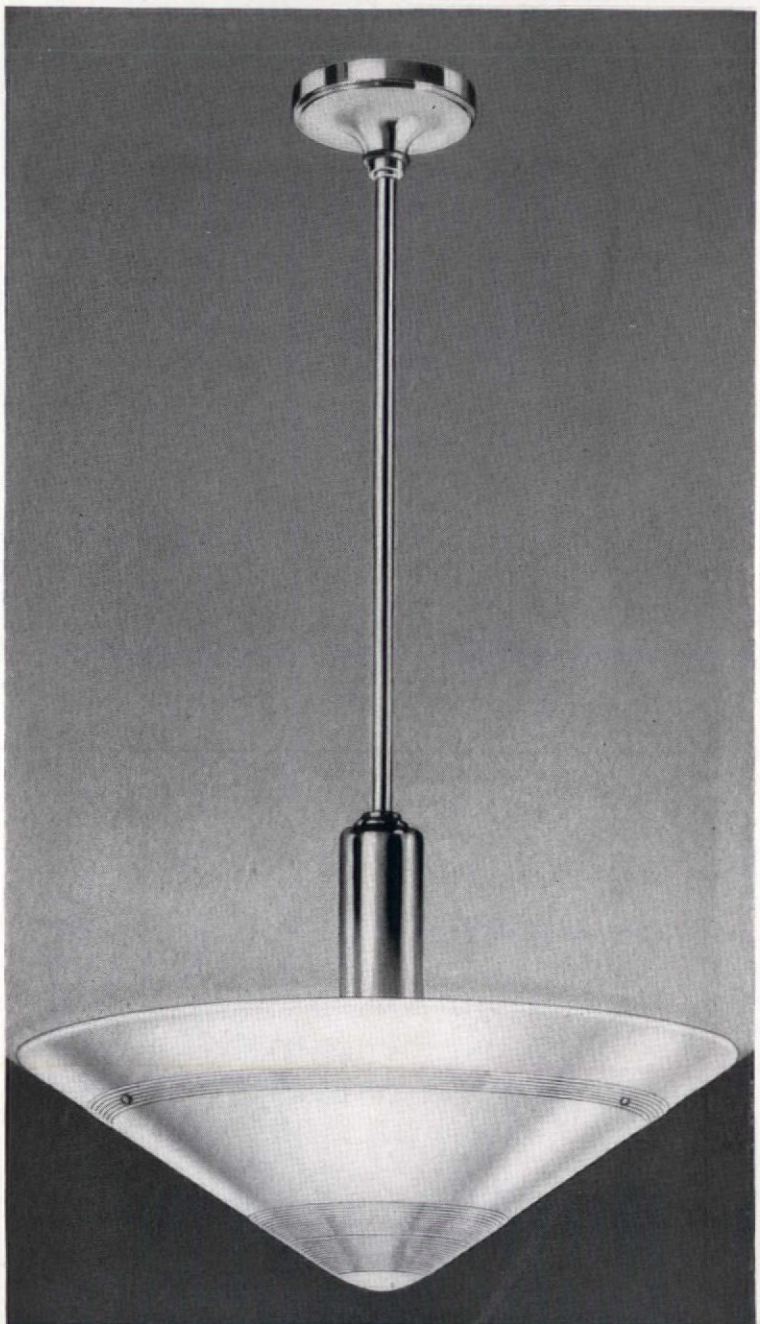






WHEN MODERNIZING LIGHTING . . . DO IT RIGHT WITH

MAGNALUX



New Features MAKE THIS FINEST LUMINAIRE EVEN FINER!

Recognized as the finest commercial luminaire on the market, MAGNALUX now boasts these new refinements . . .

New selective glass thickness . . . provides even richer color tone and lower, more uniform surface brightness.

New three-point rod suspension . . . simplifies installation, cleaning and assures uniform suspension.

New simplified socket . . . one-piece die casting permits shortening of unit to meet exacting specifications without marring the stem.

New swivel joint . . . provides semi-rigid suspension with a simplified, strong one-piece construction.

New husk design . . . provides even better light cut-off and appearance.

If you will get the complete facts about MAGNALUX . . . compare its appearance, its illumination, its construction with any other luminaire on the market . . . we feel sure that you too will agree that MAGNALUX excels. Ask your Westinghouse Distributor for a demonstration, or write us for full particulars. Westinghouse Electric & Mfg. Co., Lighting Division, Edgewater Park, Cleveland, Ohio.

WESTINGHOUSE 1886 W 1936 GOLDEN JUBILEE

WHEN YOU THINK OF *Lighting* THINK OF

Westinghouse

You can **TURN BACK ONE** *out of* **FOUR** *truckloads of coal or its equivalent by changing-over your heating plant to* **dunham differential heating**



FUEL savings made by the Differential System are independent of the kind of fuel. Users of central station steam, or oil, or gas, or various kinds of coal all get definite, worthwhile reductions of fuel costs through the exclusive operating principle of the Differential System.

The 13 story Register & Tribune Building, together with the adjoining 3-story R. & T. Annex, and nearby 2-story Furniture store and Garage, comprises a total radiation load of 28,142 square feet E.D.R.

Formerly heated with a Vacuum Return Line System supplied through reducing valves from high pressure boilers, the heating system was converted to Dunham Differential System operation in the fall of 1934. Various makes of traps and valves were replaced by Dunham products, Dunham Control Equipment and Dunham Duplex Pumps were installed.

The Register & Tribune Building and Annex are heated 24 hours per day to a temperature of 70 to 74 degrees, and the several Press Rooms are maintained at approximately 80 degrees.

A "Before" and "After" Story

During the four year period prior to the change-over, (excluding the months of June, July and August) the coal consumption totaled 14,666,000 pounds. There were 23,843 degree-days in this period, showing a consumption rate of 615.1 pounds of coal per degree-day.

Under Differential Operation during the past heating season, the amount of fuel consumed for all loads totaled 3,301,581 pounds of coal. During this period, Sept. 1, 1935 to May 13, 1936 there were 7,261 degree-days, so the consumption rate was 454.7 pounds of coal per degree-day. This shows an average saving over vacuum return line operation of 26%. In terms of fuel, the amount actually saved by operation as a Differential System during this one season was 1,164,600 pounds of coal.

Correspondence invited regarding converting existing vacuum return line, or other, systems in any type of building, to Differential operation.



C. A. DUNHAM COMPANY

450 East Ohio Street, Chicago

Over eighty branch and local sales offices in the United States, Canada and the United Kingdom bring Dunham Heating Service as close to you as your telephone. Consult your telephone directory for the address of our office in your city.

(Continued from page 164)

FORUM, August, 1935, et seq.) is initiating this month a stringent method of safeguarding loans which is one answer to the problem raised by its borough neighbor, the Bronx (see above).

Group Five effectively outlawed lending in the dark by disseminating information to member banks in Brooklyn, Manhattan, Queens, upstate New York. Information consists of pooled data concerning loans, buildings, property, real estate, and mortgage practice which is otherwise not available.

Last fall Group Five announced that its lenders' cooperative research was to be supplemented by publication of minimum specifications, mandatory on builders should they wish a loan from Group Five's member banks. Specifications were for one- and two-family houses, six-story apartment houses. To supplement what had proved a successful experiment, came this month's announcement.

An engineering department will inspect all new construction on the average of twice a week. Special attention will go to speculative jobs. Planned is a series of ratings for the various items on construction which taken together will give the rating of the completed unit. In large developments, one or two houses will be examined on the sample basis.

ADVICE TO ARCHITECTS

on the economics of building, by Appraiser Babcock.

"I am a young man, thirty-two . . . with a degree in architecture . . . As I approach the prospect of private practice I realize that in some ways I am totally unprepared . . . I'd like to become an appraiser. In fact, if I could be a successful appraiser I should be glad to surrender the ambition of being an architect. How can I prepare myself toward that end?"

So ran a plaint which came last month to the desk of Frederick M. Babcock, father of the science of risk-rating mortgages, whose only peer as appraiser is famed Philip Kniskern, and who is currently in charge of the Federal Housing Administration's appraisal division. Conscientious, Appraiser Babcock took thought, wrote an answer which constitutes a definitive Appraiser's Apologetic. Excerpts:

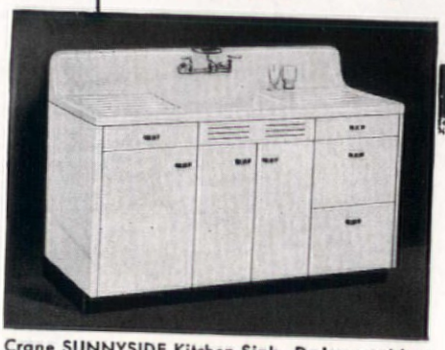
Dear Mr. Smith:

. . . I am thoroughly convinced that success in architecture requires a knowledge of real estate economics and that you will do well to study the general field of appraisal. I am not at all sure that it is wise to attempt to change horses and become an appraiser. Architecture is a recognized and reputable profession. Valuation does

(Continued on page 168)

CRANE CAST IRON PORCELAIN ENAMELWARE HAS QUALITY

All-The-Way-Through



Crane SUNNYSIDE Kitchen Sink. De Luxe cabinet with drawers and storage space ingeniously arranged



Crane SUNNYDAY Cabinet Sink with bevel fixture panel. Depressed drainboards. De Luxe cabinet with drawers and storage space. Maximum convenience

● Crane Acid-Resisting Porcelain Enameled fixtures are manufactured in a *different* way—a dry process that gives finer texture, a beautiful durable glaze and a coating that is approximately three times greater than that possible by other processes. This coating is *acid-resistant* all the way through and not merely a surface film. The natural texture of the Crane cast-iron base is eminently suitable for proper adhesion of the enamel and the thickness of the castings helps to maintain the close bond after the enamel is applied.

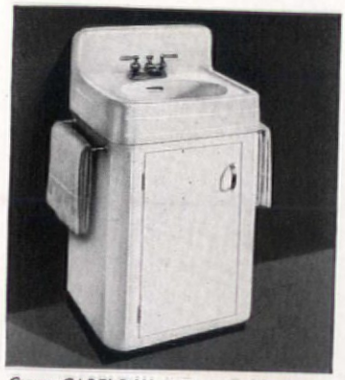
Resisting stains and injury from fruit juices and ordinary acids, easy to keep clean and long retaining their original glistening luster, Crane Porcelain Enameled fixtures assure client satisfaction.

When you specify Crane Acid-Resisting Porcelain Enameled fixtures you are specifying outstanding gracefulness of contour, skilled experience, superior workmanship and advanced sanitary design.

The Crane Finance Plan enables your clients to modernize with no money down, three years to pay.



Crane CORONADA Lavinet—A cabinet lavatory. Generous space for towels, toiletries. RAINIER fixture gives greater slab space



Crane CABELO Wall Type Cabinet Lavatory with back. Steel cabinet with baked enamel finish. RAINIER fixture



Crane CORWITH BATH—Trim, graceful. A variety of fixtures, including built-in shower

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MONCRIEF
Winter AIR CONDITIONING

Residence of Seymour Amster, Shaker Heights, Cleveland, Ohio. Monroe D. Deane, Architect.





View of Tap Room.

•

Three separate units provide most efficient zone control, greatly lower operating costs.



...Enables Architects to design basements that contribute to gracious living

● In this Cleveland home is exemplified the latest practice in air conditioning. It permits the owner to have in his basement a beautifully finished recreation room, a tap room, a bar room, and a powder room, besides spacious hall-way, lavatory, laundry, work shop, storage room and heater room.

The gas installation is entirely automatic, requiring no attention the whole season through. One unit modifies the air for the main floor, another for the second floor, and a third for the kitchen, maid's room and garage.

The system gives every desired benefit of winter air conditioning, yet is simple, and the cost is moderate. Summer comfort is enhanced by circulating air in living rooms and bedrooms.

Moncrief Winter Air Conditioning Systems are made in three specialized types to burn either gas, oil or coal—hand or stoker fired. All are modern in design, substantially made, and beautifully finished.

Write for illustrated descriptive literature and data sheets

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3485 E. 49th St. • Cleveland, Ohio



Our Engineering Department is maintained to cooperate with architects and builders in estimating and laying out plans. This service is without cost or obligation.

(Continued from page 166)

not offer the same advantages. It is not a recognized profession. It is not based on an accumulated body of formal knowledge and it is very questionable whether it can be made into a specific field of endeavor similar to the orthodox professions. There are many evidences that appraisal will be accomplished through institutional means rather than through private consultation. I would therefore suggest that you hesitate to attempt to adapt yourself to the newer field and I am, at the same time, quite certain that architecture offers tremendous opportunities during the next generation.

As I indicated above, I am convinced that success in architecture does require an intimate knowledge of real estate economics. This is the same as saying that a forthright solution of architectural problems cannot be reached without a realistic approach to functional design. In addition, there is the very homely practical necessity which confronts all young architects—namely, to be able to secure a clientele and the necessary business connections to make it possible to finance building operations. Unfortunately, there are plenty of examples of shrewd business men who succeed (from a financial point of view) in the architectural profession at the expense of other men who are more competent as architects. Of course, the greatest success necessarily combines good architecture and effective salesmanship.

My offhand advice to you would be to immediately engage in a home study enterprise in the field of mortgage finance. If I were you I would learn everything I possibly could about mortgage lending practices. This can be accomplished through regular formal study if you prefer, but I believe you are probably of the type that can accomplish the objective without the aid of the discipline of a formal school system.

In connection with the above suggestion, namely that you endeavor to study mortgage finance, it may be possible for you to associate yourself with one of the evening courses given by a local college. I understand that the American Institute of Banking plans to introduce courses in mortgage investment. . . It should be possible for you to secure an outline of its lectures.

Another suggestion that I would make is to subscribe to certain publications outside of your chosen field of architecture. For example, I would take regularly, and read, the *National Real Estate Journal* published by the Porter-Bede-Langtry Corporation in Chicago. There may be other similar periodicals published by the local real estate board or the State Association of Real Estate Boards. The latter would probably serve more to assist you to keep up with current events in the real estate and building field in your local community.

(Continued on page 170)



California Fruit Growers Exchange, Los Angeles. Architects: Walker & Eisen. Chief Engineer: F. R. Winch. Consulting Engineer: Prof. R. R. Martel, California Institute of Technology. Contractor: Wm. Simpson Construction Co.

From Coast to Coast
alert building owners turn to
CONCRETE

Architectural Concrete is fast gaining wide acceptance as the modern way to build factories and warehouses, business buildings and apartments, court houses and other public structures.

And no wonder, for today concrete offers—

Welcome economy resulting from a highly perfected technique of casting walls and ornament monolithic with the rest of the structure.

Proved weather resistance—an impressive record from Alaska to the Tropics.

Distinctive appearance, the product of complete design freedom and choice of pleasing surface textures and treatments.

Minimum maintenance and repairs.

Utmost firesafety plus rigidity and structural unity that defy even hurricanes and earthquakes.

Ask your architect and engineer about the advantages of this technique in concrete construction. Or write for one of our engineers to call.

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Architectural Concrete

Frame and floors cast integral with walls and ornamental detail . . . Weather-resistant . . . Firesafe . . . Distinctive . . . Economical



Chatham Village, Pittsburgh, Pa.
Ingham & Boyd, Architects
Henry Wright and Clarence Stein, Consultants

Let's Look At It from the *Architect's* POINT OF VIEW

The architect's success rests on his ability to please his clients. If he is to be recommended for other commissions, the architect must satisfy the owner down to the last detail. And it is because they have received such enthusiastic response from owners that so many architects, over the past 20 years, have continued to specify

MINWAX

FLAT FINISH
***for* FLOORS *and* TRIM**

Minwax is the penetrative finish that both stains and gives a beautiful wax finish in one simple operation. The simplicity of its application eliminates difficulties on the job and cuts down expense; and Minwax brings out all the fine beauty of the wood and gives a finish that can be achieved by no other method.

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Moreover, *floors finished with Minwax never need re-scraping!* Because the finish is in the wood itself, maintenance of Minwaxed floors amounts to practically nothing—an occasional re-waxing is all that is ever necessary. All other methods require frequent re-scraping.

Chatham Village in Pittsburgh is one of the many large-scale housing projects where Minwax Flat Finish has been specified and found eminently satisfactory. Others include: Hillside Housing, New York City; Radburn, N. J.; Phipps Garden Homes, Long Island City, N. Y.; London Terrace Apartments, New York City; and many others.

Send For Booklets

Minwax products are catalogued in Sweet's . . . but you are invited to write for more specific information at any time.

MINWAX CO. INC.
Dept. AF
11 W. 42nd St. New York

(Continued from page 168)

Most important: try to cultivate friends among local financial institutions, especially the men who are concerned with the mortgage business. I believe that, aside from the business contacts you would secure, the day-to-day conversations with such individuals will give you an entirely new point of view with respect to your own profession. Such contacts may lead you into certain business engagements which could very well be the practical training in building economics to which you refer in your letter. One of the most important lessons learned by lending institutions during the depression was the great significance which attaches to architecture and building construction in connection with the selection of mortgage risks for investment. The traditional method of selecting mortgage risks was to rely almost entirely upon the opinions of appraisers—real estate men who were presumed to be conversant with rental and market conditions. It is now evident to virtually everyone in the mortgage-lending field that at least three kinds of specialized talent are vitally important in selecting mortgages:

(1) Valuators—men who are familiar with city trends, economic backgrounds of the investments, characteristics of locations and subdivisions, properties, and the probable marketability of different kinds and qualities of properties.

(2) Credit Examiners—men who are acquainted with all of the requirements of sound patterning of loans according to the probable abilities of borrowers to repay.

(3) Architects and Builders—men who are competent to judge the characteristics of building improvements and plot plans from the point of view of structural durability, functional plan, and general architectural attractiveness.

Modern mortgage practice definitely does involve the three above types of talent. This has been reflected in the technical organization of the Underwriting Staff of the Federal Housing Administration. I am sending you under separate cover a copy of the Underwriting Manual of the Federal Housing Administration which will constitute a good handbook for you in connection with dwelling mortgage practice. You will readily see that the architect is not a neglected individual in the organization set-up. May I remind you that the system described in the Manual has been adopted by a considerable number of private lending institutions? This will indicate why I believe that you would do well not to abandon the field of architecture but rather utilize your architectural background in a somewhat new field. . . .

Frederick M. Babcock, Chief



One unit of the Moreland Courts Apartment Group, at Shaker Square, Cleveland, Ohio

HEATING MODERNIZATION HELPS TO HOLD TENANTS

Use Webster Moderator System In Exclusive Shaker Square Apartment Building

SAVES $567 IN FIRST SEASON

Cleveland, O.—The Moreland Courts Apartments, a four to eight story apartment group at the gateway to Shaker Heights, one of Cleveland's wealthiest suburbs, has had a high percentage of occupancy throughout the depression principally because tenant satisfaction has been made the basic management principle.

In the fall of 1934, the management of the Moreland Courts Apartments authorized a Webster Heating Modernization Program for one of its units. The heating system was relatively modern but the management felt that improved distribution and control would increase comfort for tenants and, at the same time, reduce heating expenditure.

The improved heating service provided by the Webster Moderator System of Steam Heating, coupled with a reduction of more than $500 a year in heating expense, has demonstrated the economic soundness of keeping heating equipment up-to-date.

Mr. L. M. Van Fossan, Resident Manager, reports that tenants are pleased with the quietness and absence of overheating.

During 1934-35, the first season with the Webster Moderator System, steam consumption was reduced over one million lbs., a cash saving of $567.19. The monthly savings were as follows: October, $16.85; November, $34.49; December, $106.94; January, $116.72; February, $118.80; March, $57.36; April, $65.76; May, $50.27. Without any "starving" of the system to show savings, these substantial economies have continued month after month. In two years of operation, the modernized system has clearly shown its ability to improve steam distribution and reduce heating expense.

The Moreland Courts Apartments installation is supervised by T. W. Kelly, Superintendent of Maintenance of an entire group of apartments. There is a total of 7,223 square feet of installed direct radiation in the unit under the Webster Moderator System.

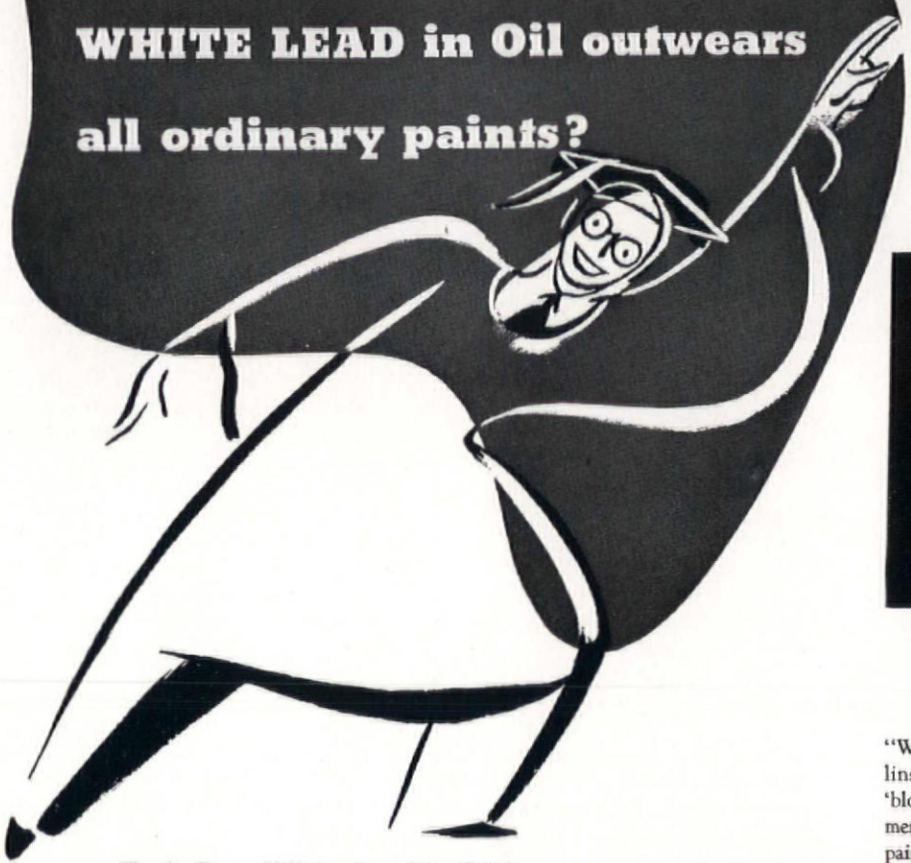
A Webster Heating Modernization Program offers building owners and managers an opportunity to protect their property investment, keep tenants well satisfied and make a substantial reduction in heating expense.

If you are interested in heating *new* buildings, or in improved heating service and lower heating cost in your present building, address

WARREN WEBSTER & CO., Camden, N. J.
Pioneers of the Vacuum System of Steam Heating
Branches in 60 principal U. S. Cities—Estab. 1888

Chemically active pigment stops cracking and scaling

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"Eagle white lead is a chemically active pigment. See how pigment particles look when greatly magnified. The irregular, uneven shape of pigment particles is one reason why a film of Eagle Pure White Lead in Oil wears so long!"



"When these white lead particles are mixed with linseed oil, a chemical reaction begins. Particles 'blossom out', making an interlocking mass of pigment and linseed oil. Inert pigments found in many paints do not blossom out."



"The union of white lead and oil forms a paint that seeps into the surface it is applied to . . . sticks on like glue. It stays tough and pliable . . . does not crack when surface expands or contracts."

BRITISH BUILDING BOOM: AN APPENDIX

THIS page introduces Britain's Biggest Builders. Of the collection, Messrs. Shephard, Holland, Rowe, McAlpine, Burt, and Laing and the companies they represent, are considered to have engaged in more activity throughout the Empire or in England than any others.

Today **Phillip Edward Shephard** owns about 500 houses, three estates. Yet he is reputed to have put up more houses in less time than any of his confreres. Despite the fact that he is perhaps the smartest speculative builder of them all, he is comparatively little known in the industry, keeping himself behind the shield of his sons in ostensible retirement.

An avowed money-maker, he netted all he needed from New Ideal Homesteads, left the company's management some years ago. To a casual observer, he looks some 55 years old; actually he is over 70. His fingers are, however, still in many a pie, currently one of publishing.

George Holland, one of the Old Guard's last, is still nominal head of the curious firm which insists that its name be written Holland & Hannen And Cubitts, Ltd. This company is the healthy result of an amalgam which in 1909 united the strongest rivals of Nineteenth Century London. They combined in time to build the Government munitions factories, later erect, on one contract, more than 7,000 homes for the London County Council, at the Downham Housing Estate. In its active management, bland, aquiline Secretary V. P. Vickerman and Managing Director L. C. Hill have as important executive posts as anyone.



Builder Holland

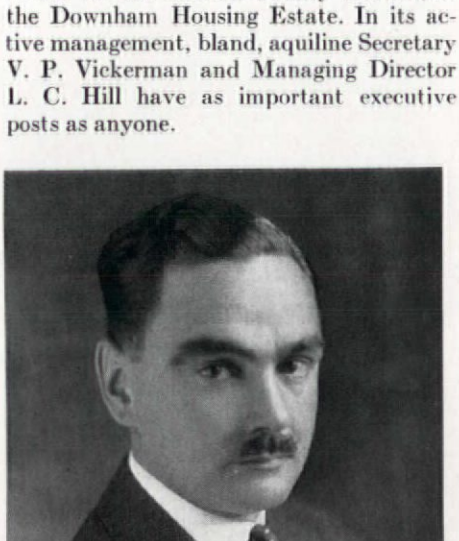
Col. C. W. D. Rowe, M. B. E., started in the sales department of the London Brick Co., and although he has since mastered every branch of the organization which manufactures 50 per cent of England's bricks, he continues as sales and advertising expert. Dapper, handsome, and persuasive, he is supposed to know more about the brick industry than any other man in Britain. Immensely versatile, he advises the government on munitions and aircraft, flies a bit himself. His golf handicap is two, he is a tennis and squash enthusiast, and recently climbed Wales' Mount Snowden. His great hobby, however, is his Bentley, which he drives over 100 m.p.h.

Sir Robert McAlpine & Sons employs some eighty-odd McAlpines. Three of these have been chief work-horses since the death two years ago of Sir Robert. Speech-maker and bow-taker is the hard-bitten **Sir Malcolm McAlpine,** K.B.E., who started work at seventeen with navvies on a West Highland railroad. His one respite since then came when a landslide broke his pelvis in seven places, hospitalizing him for three months, and putting him on crutches for three more. But then his father told him to stop soldiering.

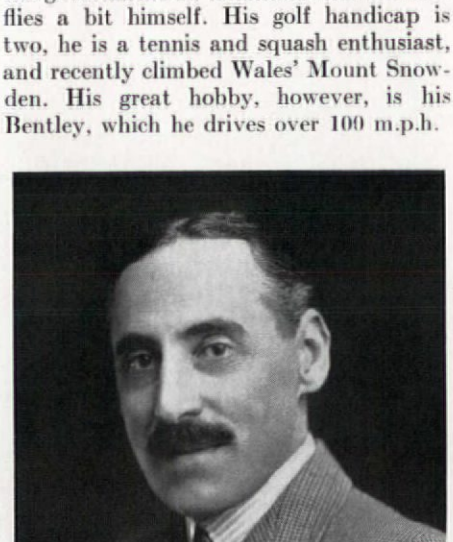
Behind Malcolm is William Hepburn McAlpine, the company's financial and technical brain. He it is who keeps everybody in the company on the alert. Alfred David, still another of the clan, is in charge of the Liverpool district, keeps a stable of race-horses.

Of the same dour Scottish breed as the McAlpines is **George Burt** of Mollem & Co., which, because of its many contracts in Asia and Africa, has earned the reputation of being the Empire's biggest contractors. Burt is the man behind Mollem & Co.'s foreign business.

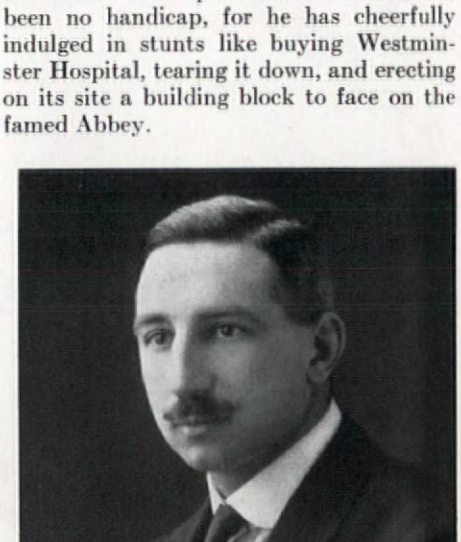
A famed name in Britain's Building is that of **John Laing,** who has grown up and grown old in the industry. He is the grand old man of building, following a family tradition. Socially and religiously more conscientious than his associates, he is substantial rather than speculative. Yet this has been no handicap, for he has cheerfully indulged in stunts like buying Westminster Hospital, tearing it down, and erecting on its site a building block to face on the famed Abbey.



Builder Rowe



Builder McAlpine



All photos © Elliott & Fry

Builder Burt

Turn the UGLY DUCKLING *into a* SWAN





BEFORE—Old-fashioned kitchen in a residence in Chestnut Hill, Mass. An ugly duckling? That's putting it mildly.





AFTER—The same kitchen . . . at least it's the same four walls. Do not the double-bowl "Straitline" cabinet, sink and cabinet tops show evidence of planning the equipment for one individual room?

It's EASY the Monel Metal way, with sink-and-cabinet units made to size . . . plus this free planning service!

THE "two" kitchens above are not out of a fairy tale. They illustrate the ease with which *you* can turn a dingy work-room, fit only for drudgery, into a bright, glistening kitchen which reflects pride of ownership.

The architect who did this job of modernizing chose a Monel Metal sink and Monel Metal work surfaces because of the *quality* of this high Nickel alloy. He found too that Whitehead had saved him a lot of time and trouble in installing them.

For Whitehead, the maker of Monel Metal sinks, now makes the steel base cabinets and wall cabinets as well. No more headaches for you from jumping out of one catalog into another, trying to see if cabinet XY632 will fit sink CD497!

Just write to Whitehead and let them take that labor off your hands. Did you know that they supply the sink-and-cabinet units to fill any space from 48″ to 144″, *exact to the fraction of an inch?* So they fit each individual kitchen you are working on.

In addition, they operate a complete kitchen planning service. Send them your dimensions, and an idea as to your budget. They'll return you a complete kitchen plan. With an estimate that will surprise you.

Your two eyes tell you that Monel Metal's silvery surface gives beauty to any kitchen. It takes experience to show that that beauty lasts through years of hard service. Monel Metal is solid; it cannot chip, crack, or peel. *It does not rust.* Ordinary cleaning makes it gleam even more brightly as the years roll off its smooth surface.

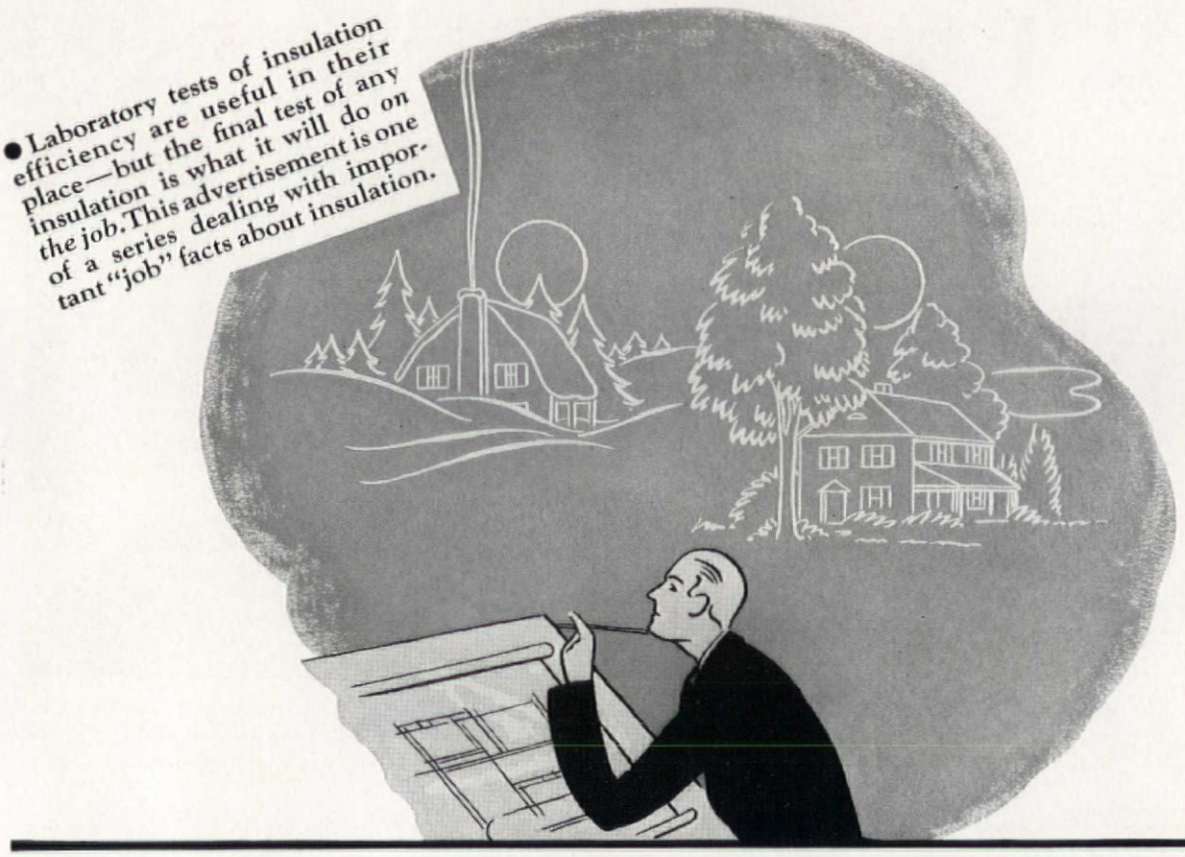
Get in touch with a Whitehead representative. Ask him for a plan and estimate on that kitchen you're modernizing or laying out. Try this method once, and judge it by results. Address: Whitehead Metal Products Co. of New York, Inc., 304 Hudson Street, New York, N. Y.

• • •

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET NEW YORK, N. Y.

MONEL METAL

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.



HOW THICK SHOULD INSULATION BE?

YOU Are the Best Judge

● Two buildings—one in Northern Minnesota and the other in Oklahoma. Would you specify the same thickness of insulation for both? Certainly not, because you know—and we know—that climate has a lot to do with the thickness of insulation needed.

We believe the architect is the best judge of the amount of insulation needed for the buildings he designs. And so we make Balsam-Wool SEALED Insulation in THREE thicknesses to fit every condition. You are never obliged to waste the client's money by specifying *too much* insulation, when you use Balsam-Wool. You need never specify too little. You can put the *right* amount of insulation in the right place.



Every important test which an insulating material must meet has been anticipated by the manufacturers of Balsam-Wool. Balsam-Wool is really two separate materials made into one. Its body is one of the most efficient insulations known to man . . . its shields are the utmost in moisture and wind protection. Highly fire-resistant, windproof, moistureproof and non-settling, Balsam-Wool gives the owner a permanent return on his investment. Complete information about Balsam-Wool is yours for the asking.

WOOD CONVERSION COMPANY
Room 147, First National Bank Building St. Paul, Minnesota

BALSAM WOOL
WOOD CONVERSION COMPANY

WEYERHAEUSER FOREST PRODUCTS

Made By The Makers of
NU-WOOD
ST. PAUL · · · MINNESOTA

Products of Weyerhaeuser

(Continued from page 13)

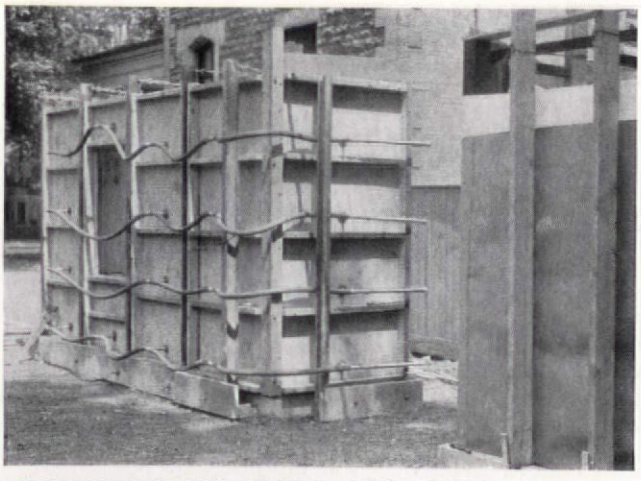


THE VACUUM MATS APPLIED

water, thereby producing a dense, high-strength concrete. To accomplish this, the surface of the forms is grooved and covered with a filter cloth to prevent loss of cement. The grooves are connected to a suction hose through holes in the forms, the hose running to a receiver and vacuum pump mounted on a truck.

The quick drying and early strength of the concrete permits the rapid removal of the forms and their immediate re-use. In the case of a wall, it is feasible to make two lifts in an eight-hour shift. Because of the reduction of the outward pressure of the wet concrete when the vacuum is applied, it is possible to use light forms and eliminate tie wires or bolts through the wall. In fact, if some bulging of the concrete is not objectionable, it is possible to use heavy waterproof paper, supported by wood stiffeners, for vertical forms. Wet, easily flowing concrete can be used. The surface can be treated with a colored wash or cement finish before the final set has taken place, thus forming an integral part of the wall itself.

In a demonstration, a double wall was constructed 2½ ft. high, the inside hollow space being formed by paper supported by wood stiffeners 20 in. on centers. Forms were removed about an hour after the vacuum was applied. The paper forming the inside of the hollow space was left in place as additional dampproofing. The concrete had bulged out about an inch between the stiffeners.



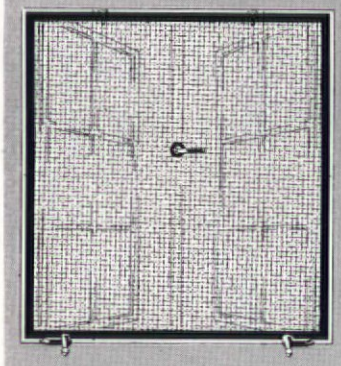
DEMONSTRATION WALL AND MATS

(Continued on page 40)

STEEL CASEMENT

Note that one handle on the meeting rail locks two swing leaves at once. Swing leaves operated by roto-adjusters at sill. Hundreds of stock types and sizes: some with fixed sidelights, transoms, Tilt-in sill ventilators, circular heads, etc.





INSIDE SCREEN

One bronze-mesh screen covers both swing leaves. Locking handle extends through grommet in center. Windows opened, closed, locked without touching screens. Flat metal frames are non-warping. Screens need not be numbered for storage.

INSIDE STORM SASH

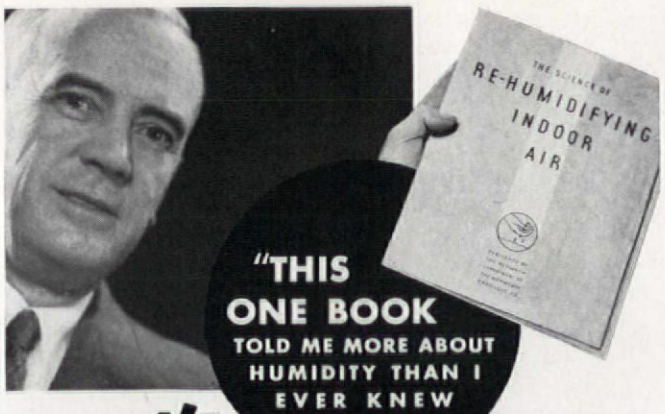
Replaces screen in winter. Extruded rubber weathering around handle and around perimeter of frame seals opening tight. Provides ¾" insulating, dead-air space. Double strength glass. Tilt-in sill ventilator admits fresh air. "Fixed light" types also available.



WINDOWS FOR AUGUST — AND JANUARY!

Fenestra's complete window — Steel Casement, Inside Screen and Inside Storm Sash — brings the home owner *year 'round* comfort and convenience: Frost-free glass, important fuel savings, and more daylight, in winter; protection against insects, and better ventilation, in summer; finger-touch operation; safe cleaning; fire safety; etc. Write for details. DETROIT STEEL PRODUCTS CO., 2249 East Grand Boulevard, Detroit, Michigan.

Fenestra



NEW-REVOLUTIONARY

● This book tells briefly, yet comprehensively, of the greatest advance ever made in re-humidifying indoor air.

● It explains why constant relative humidity is both undesirable and impossible to attain.

● It tells how to provide adequate humidity at all times *and yet prevent excessive window condensation in cold weather.*

● It shows why indoor humidity should and can be regulated with relation to outside temperatures. It describes

AUTOMATIC JUNE

The Hydro-Metric Humidifying System

—the system which automatically graduates indoor humidity on an entirely new principle—which provides ample humidity in mild weather when furnace bonnet temperatures are low—which prevents weeping windows in extremely cold weather.

THE MONMOUTH PRODUCTS CO.
209 E. 131st ST. CLEVELAND, OHIO

Send for Your Free Copy Today—

THE MONMOUTH PRODUCTS CO.
209 E. 131st St., Cleveland, Ohio

Please send me copy of "The Science of Re-Humidifying Indoor Air" and literature describing Automatic June.

Name _____

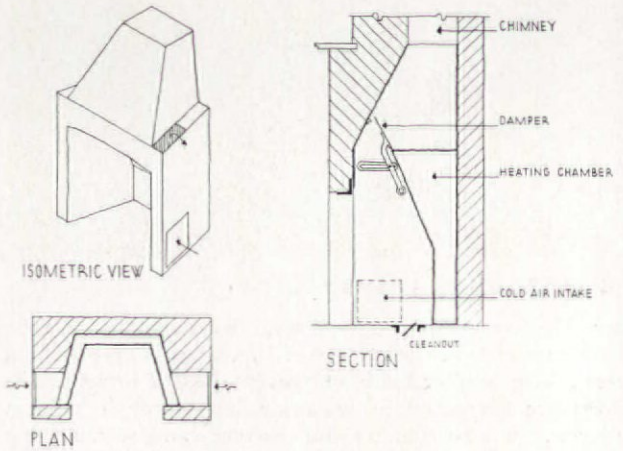
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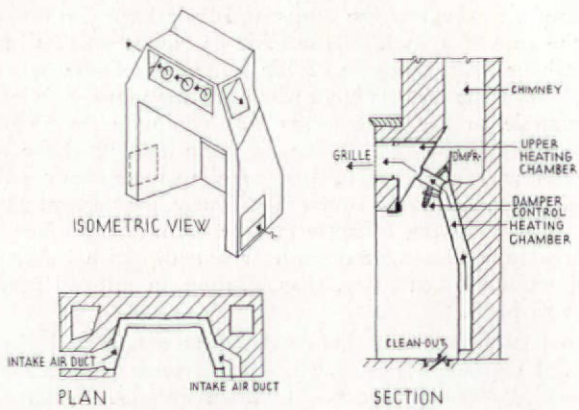
(Continued from page 39)

THE EFFICIENT FIREPLACE

While in some residences, particularly apartments, the chief value of the fireplace is to strike a note of sentiment by recalling the "old days," in many homes it still functions as an auxiliary heating plant. For the in-between seasons, for the cool evenings of late spring and early fall when the



HEATILATOR FIREPLACE



SUPERIOR FIREPLACE

heating plant has been shut down, for the summer cottage with no heating plant, we find the fireplace again serving a useful function. And with no woodsheds in which to store an adequate supply of those dry logs which are now probably our most expensive form of fuel, we are interested in building fireplaces as efficient heating plants capable of heating, if necessary, not only one but several rooms.

In heating systems we recognize, and usually take advantage of, two forms of heat—radiant and convected. The ordinary fireplace utilizes only the first, toasting one uncomfortably on one side while leaving a chill on the other. The problem then is to utilize some of the heat otherwise wasted up the chimney and to distribute it through the room. This has been accomplished by utilizing the fireplace as the combustion chamber of a warm air furnace made of steel and built into the masonry, designed so that cool air is drawn in at the sides of the fireplace near the floor or from the outside, circulated around and over the hearth where it becomes heated by the fire, rises, and is thrown out into the room above the fireplace. Some of it may be carried by ducts to other rooms. At the same time the fuel burning on the hearth throws out as much radiant

(Continued on page 42)

NO OPEN JOINTS !
NO KNOT HOLES !



when you use

BILDRITE SHEATHING



Insulite products are treated against termites, rot and fungi.

PROTECTED BY THE TERMILITE PROCESS
THE SAFE PERMANENT TREATMENT AGAINST TERMITES, ROT, FUNGI

THERE is complete freedom from drafts and the infiltration of dust, dirt and dampness through wall sections when you build with Bildrite Sheathing. From edge to edge and from surface to surface Bildrite Sheathing is completely uniform. All joints fall on framing members leaving no openings.

Bildrite Sheathing has taken the building industry by storm. And no wonder. Consider these important advantages:

1. **Four times the bracing strength of 8″ ship-lap;**
2. **Far more insulation than average lumber;**
3. **No open joints or knot holes;**
4. **Lower application costs;**
5. **Moderately priced.**

If you have not yet had a sample of Bildrite Sheathing, fill in and mail the coupon today. You'll be surprised at the strength and ruggedness of this remarkable new building material.

EXAMINE IT YOURSELF

The Insulite Company, Dept. AF56,
Builders Exchange Building, Minneapolis, Minn.

Please send me sample and information on Insulite Bildrite Sheathing

Name .....

Street Address .....

City and State .....

IN EVERY ADVERTISEMENT TO PROSPECTIVE BUILDERS OR MODERNIZERS WE SAY: "IT WILL PAY YOU TO SEE AN ARCHITECT WHEN YOU BUILD OR REMODEL"

AUDITORIUM PATENTS

MORE THAN 25 OF THEM Available To The Industry!

In view of the great volume of proposed air conditioning work at this time and its desire that the benefits of its systems and inventions may be easily and inexpensively obtained, AUDITORIUM has put into effect—

REDUCED Royalty Charges

This royalty reduction, coupled with a flexible licensing arrangement, enables you to combine various features of the patents which the architect and engineer think will give the best system for the specific requirement of any particular installation. These patents embody the most advanced thought of recognized authorities in the art of air conditioning and they are available to anyone upon payment of the same comparatively small royalty as is paid by our licensees.

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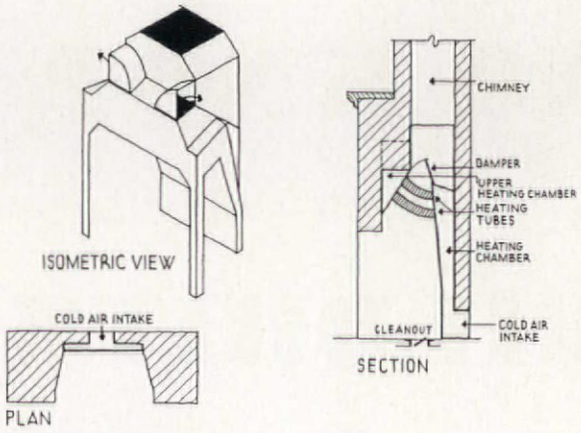
New York Office - 17 EAST 42nd STREET
NEW YORK

Note: — All Licensees Have Bound Copies Of The Auditorium Patents Which Are Available For Reference.

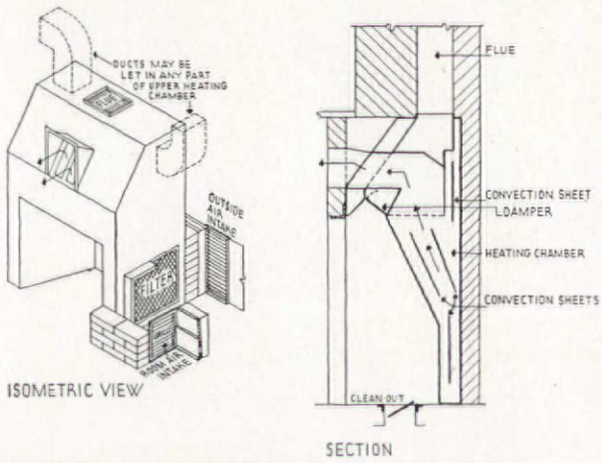
PRODUCTS AND PRACTICE

(Continued from page 40)

heat as it would have done in an ordinary fireplace.
This steel furnace, which goes under several names, is made in various sizes and models, some of which can be placed inside of existing fireplaces.



BENNETT FIREPLACE



DONLEY HEAT SAVER FIREPLACE

The units which have been described and illustrated are made by Heatilator Company, Syracuse, N. Y.; Superior Fireplace Co., Los Angeles, Calif.; Bennett Fireplace Corporation, Norwich, N. Y.; The Donley Brothers Co., Cleveland, Ohio. A similar unit is also made by The H. W. Covert Co., 229 East 37th St., New York, N. Y.

MERCURY VAPOR LAMP

A small bulb-type mercury vapor lamp with a standard screw base has just been put on the market. Although consuming only 85 watts, it has a light output approximately equal to that of an ordinary 200 watt incandescent lamp. The light source is a minute column of mercury vapor in a sealed quartz tube. This is mounted within a standard T-10 bulb (5½ in. long x 1¼ in. in diameter). It must be used with a transformer on standard alternating current, and a special compact model has been developed for it. Its small size and high efficiency open up possibilities for use in scientific and industrial fields, as well as for "artificial daylight" in combination with incandescent lamps.
These new lamps are made by the Westinghouse Lamp Co., Bloomfield, N. J., and the General Electric Vapor Lamp Co. at Hoboken, N. J.

(Continued on page 44)

An architect's foresight . . .



. . . guarded this town hall against LIGHT FAILURE

THE attractive town hall in a small New England city was safeguarded, through the foresight of the architect, with an Exide Keepalite Emergency Lighting Battery System. Town, committee meetings and civic gatherings are held in the building at night. Following is the Exide Engineer's Operating Report after a periodic inspection:

"On April 6 an inspection was made of the Exide System installed at the above location.

"Last summer they had three power interruptions, lasting from one-half to nearly an hour, and a considerable number in years previous. The Exide System prevented failure of the lights in all cases."

As events during recent months have shown, storms, floods, fires and accidents—occurrences beyond human control—can cut off the normal electric current supply over extended areas. The utility companies take every possible precaution, but modern buildings need emergency protection of their own.

An Exide Keepalite Emergency Lighting Battery System provides certain and economical protection. Operating cost is as low as one cent a day. Mail the coupon for detailed information.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

WHAT IS EXIDE EMERGENCY LIGHTING?

An Exide Keepalite Emergency Lighting Battery System automatically and instantly supplies abundant light, to a single room or an entire building, *in case the normal electric current supply fails.* It is fully automatic and absolutely dependable.

Exide Keepalite
EMERGENCY LIGHTING SYSTEMS
$150 AND UP

Refer to Sweet's Catalogue, Section 27—Page 11, 1936 Edition

MAIL THIS COUPON

THE ELECTRIC STORAGE BATTERY CO.
19th Street and Allegheny Avenue
Philadelphia, Pa.

Send me, without obligation, Don Graf's data sheets on Exide Emergency Lighting.

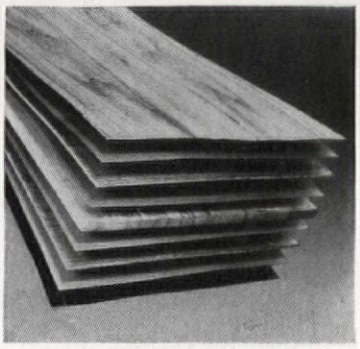
Name----------

Name of Firm----------

Address----------

I am an Architect Engineer Draftsman Student

TEGO
GLUE FILM



FOR EXPOSURE
TEGO-Bonded Plywood

HOUSING, as an example of service calling for high-exposure resistance, illustrates a recent change in the status of plywood.

Previously the thought of its exterior use has been associated with certain knowledge of glue-breakdown through mold, water and checking. Now it is known that with a Tego-bond, plywood can completely withstand exposure to boiling water, hot sun, lake fronts, ocean and tropical storms.

Through bonding with Tego Glue Film, the other advantages of plywood thus become fully available, not only to house construction, but to tropical conditions, concrete pouring, marine uses and all the applications coping with exposure.

RESINOUS PRODUCTS
AND CHEMICAL COMPANY, INC.
222 *West Washington Square*
PHILADELPHIA

PRODUCTS AND PRACTICE

(Continued from page 42)

RUBBERSEAL COPPER

Taking advantage of the properties of Anaconda light-weight "Electro-Sheet" copper, the Mitchell-Rand Manufacturing Corporation, 51 Murray Street, New York, N. Y., has produced a new waterproofing and dampproofing material by coating both sides of the copper sheet with a special soft compound. They claim that their new product, "Rubberseal" copper, retains its high flexibility at low temperatures and is unaffected by heat, moisture, or dryness, that it is self-sealing, and bonds directly to many surfaces. It has been used for roofing, flashing, spandrel waterproofing, lining shower stalls, and work of a similar nature.

TECHNICAL PUBLICATIONS

SELECTION OF LUMBER, by Forest Products Laboratory, U. S. Department of Agriculture, 9½ x 6, 45 pp. For sale by Superintendent of Documents, Washington, D. C., 5 cents.

Of particular value to the architect and builder, large or small, is this new bulletin of the Forest Products Laboratory. In brief, condensed form it classifies woods used in the home by their suitability for various uses and gives recommended grades. In another table, commonly used woods are graded according to such properties as hardness, freedom from shrinkage or warping, paint holding, nail holding, resistance to decay, strength, stiffness, and toughness, and these properties are discussed. Again, instead of merely setting forth grades and sizes, these are grouped under desired characteristics, such as strength factor, appearance factor, wear resistance factor.

The standard lumber items commonly carried in retail yards are illustrated and described, and many useful hints for the care of wood in use are given. This booklet is not to be judged by its unattractive cover, characteristic of Department of Agriculture publications, nor by its subtitle, "Farmers' Bulletin No. 1756."

PLANNING MANUAL FOR ELECTRIC KITCHENS, National Kitchen Modernizing Bureau, New York, 12 x 9, 71 pp., paper, 1-10 copies, 75 cents; 11-25 copies, 65 cents; 26 or more, 60 cents.

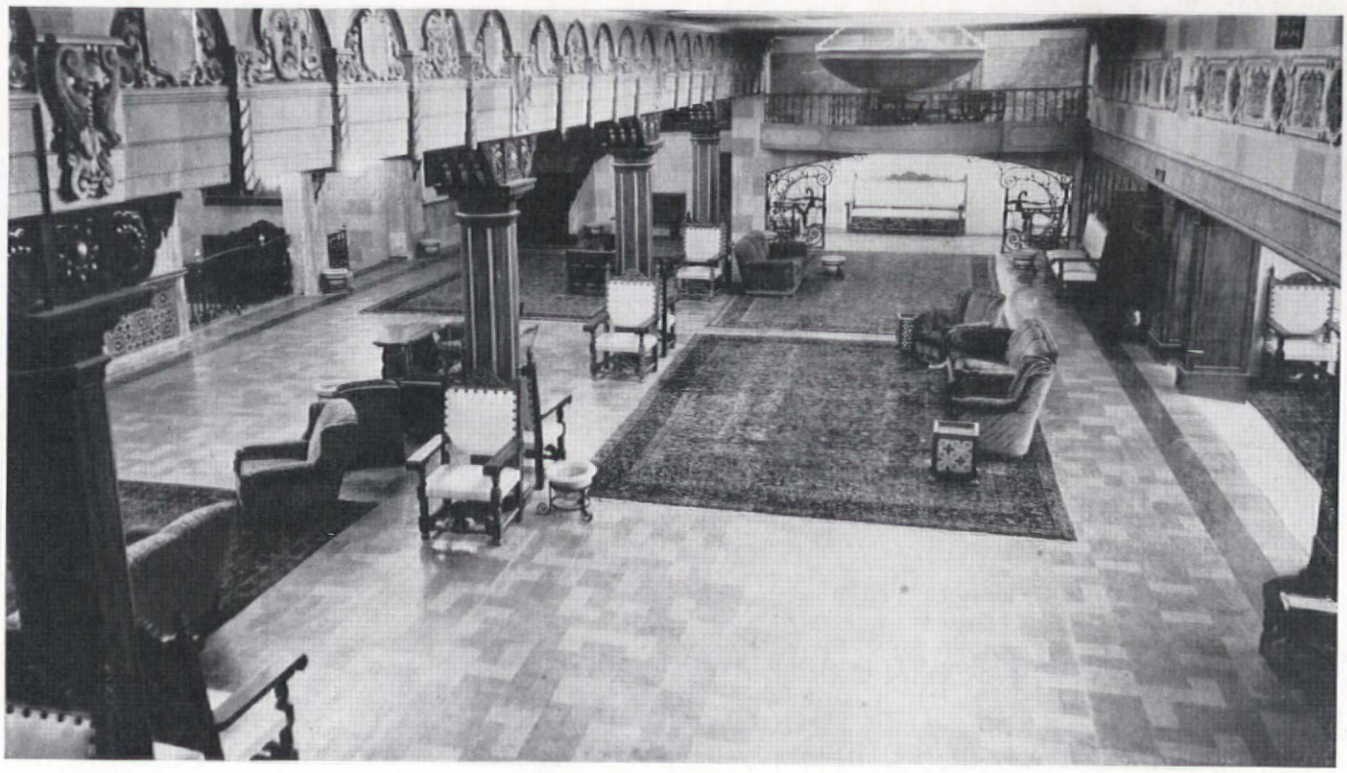
Increasing attention is being given to the kitchen as the heart of the home. Because it is primarily a workshop, it should be efficiently utilitarian; because it is the center of food preparation, it should be clean and sanitary; and because so much time is spent there, it should be cheerful and attractive. These are the essence of the modern kitchen, the clues to kitchen planning. This book first describes the materials and equipment, the lighting, wiring, and structural arrangements which form the kitchen of today. It suggests color schemes to add to the attractiveness of the kitchen.

The principles of logical arrangement are discussed and rules for determining size and storage space are given. Realizing that cost is an important factor, the authors have taken six recommended layouts for houses of different sizes and listed and priced the equipment contained in each. Fifty different kitchen plans for residences of various sizes, each with elevations and dimensions, are recommended.

While the book is written to aid those who do not have access to expert kitchen planning service, the material it contains will be helpful both to the expert kitchen planner and his client: the planner will find it useful reference material and it will enable the client more intelligently to discuss his problems with his adviser.



Mexico City's Magnificent New Theater Boasts Beautiful AZROCK Floors...



Photograph illustrates how the brilliant architect of El Teatro Alameda captured the decorative beauty of Azrock Tile for his elaborate interiors.

To the Land of The Aztecs, where beauty is heart-deep, AZROCK has been imported for one of the outstanding architectural accomplishments of Mexico's great modern city. And in every part of our own country, AZROCK Tile is creating distinctive floors in homes, schools, theaters, offices, hospitals, buildings and stores. A goodly share of AZROCK'S fast growing popularity is due to the many rich colors and various sizes of AZROCK, which give the architect or flooring expert *carte blanche* in designing original and exceptionally beautiful floor patterns.

On all practical counts, too, AZROCK succeeds equally well in meeting present day needs. AZROCK is durable for long life and heavy service; buoyantly resilient for foot comfort and quiet. This sanitary, easily cleaned tile is moisture-proof, fire-resistant, non-conducting of electricity or extremes of heat or cold. AZROCK will not warp nor check with age or usage and may be laid over wood or cement, old or new, sub-floors. And AZROCK costs no more than many ordinary floor coverings!

AZROCK
(TRADE MARK REG. U.S. PAT. OFF.)
CARPET TILE

UVALDE ROCK ASPHALT CO., SAN ANTONIO, TEXAS
Without obligation to me, please send me more information about AZROCK Carpet Tile.

Name_____ Address_____

MIAMI Bathroom CABINETS Mirrors and Accessories

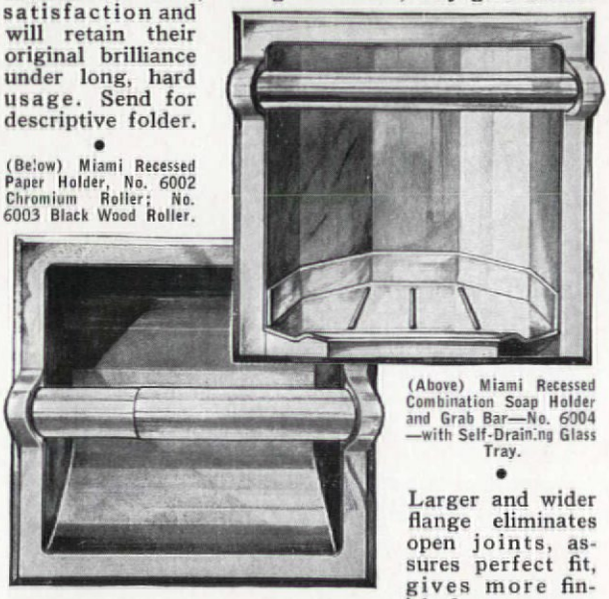
Satisfy Modern Needs!

MIAMI Chromium Bathroom Accessories

are backed by more than 15 years of specialized manufacturing experience, and definitely meet the requirements of modern construction. Popularly priced—inexpensive to install. Made of forged brass, heavily nickeled, then covered with hard, lasting chromium, they give utmost satisfaction and will retain their original brilliance under long, hard usage. Send for descriptive folder.

•

(Below) Miami Recessed Paper Holder, No. 6002 Chromium Roller; No. 6003 Black Wood Roller.



(Above) Miami Recessed Combination Soap Holder and Grab Bar—No. 6004 —with Self-Draining Glass Tray.

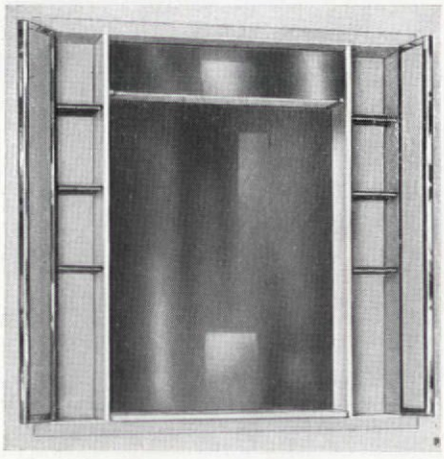
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Larger and wider flange eliminates open joints, assures perfect fit, gives more finished appearance.

The MIAMI "Oxford" Cabinet (below) is but one of over 40 Distinctive and Original Miami Cabinet Creations. It is different—with large recessed mirror flanked on each side by a storage cabinet having chromium-framed mirror door. Indirect lighting and other exclusive features. Complete catalog mailed on request.

See Sweet's Catalog for details of the Miami and Carey Bathroom Cabinet Lines.

•



The MIAMI "Oxford"

MIAMI CABINET DIVISION
The Philip Carey Company
Dept. AF MIDDLETOWN, OHIO

MANUFACTURERS' PUBLICATIONS

AMONG the manufacturers' publications recently received of interest to the architectural profession were the following:

LIGHTING FIXTURES

Holophane Co., 342 Madison Avenue, New York, N. Y. 375-L—catalogues the many fixtures of this company, shows their light distribution characteristics, and explains the basic principles behind Holophane reflectors.

HARDWARE

Lockwood Hardware Mfg. Co., Fitchburg, Mass. Catalogue No. 20-A of their complete line of builders' hardware.

WALLBOARD

Armstrong Cork Products Co., Lancaster, Pa. A booklet showing their new color Temlock De Luxe wallboard, plank, panels, and tile.

STORE FRONTS

The Kawneer Co., Niles, Mich. A booklet showing Kawneer's store front construction with illustrations of many of their installations.

PLUMBING

Streamline Pipe and Fittings Co., Port Huron, Mich. Division of Mueller Brass Co. Catalogue F of streamline pipe and fittings.

Lead Industries Association, 420 Lexington Avenue, New York, N. Y. A leaflet detailing the correct installations of lead shower pans.

Tracy Manufacturing Co., Preble Avenue and Edgerley Street, N. S., Pittsburgh, Pa. A catalogue of stainless steel kitchen and pantry sinks.

AIR CONDITIONING

The Monmouth Products Co., Cleveland, Ohio. A booklet entitled "The Science of Rehumidifying Indoor Air" explains how automatic humidity control is accomplished by the Automatic June humidifying system.

STEEL FRAMING

Bethlehem Steel Co., Bethlehem, Pa. A booklet entitled "Bethlehem Sheets and Strip" describing with many colorful illustrations the process of making steel sheets and strips in their new continuous rolling mill.

A folder showing how Bethlehem steel studs are used in light steel frame construction.

CEMENT

Pennsylvania-Dixie Cement Corp., 60 East 42d Street, New York, N. Y. A pocket booklet, particularly handy for field work, containing useful tables on concrete mixers.

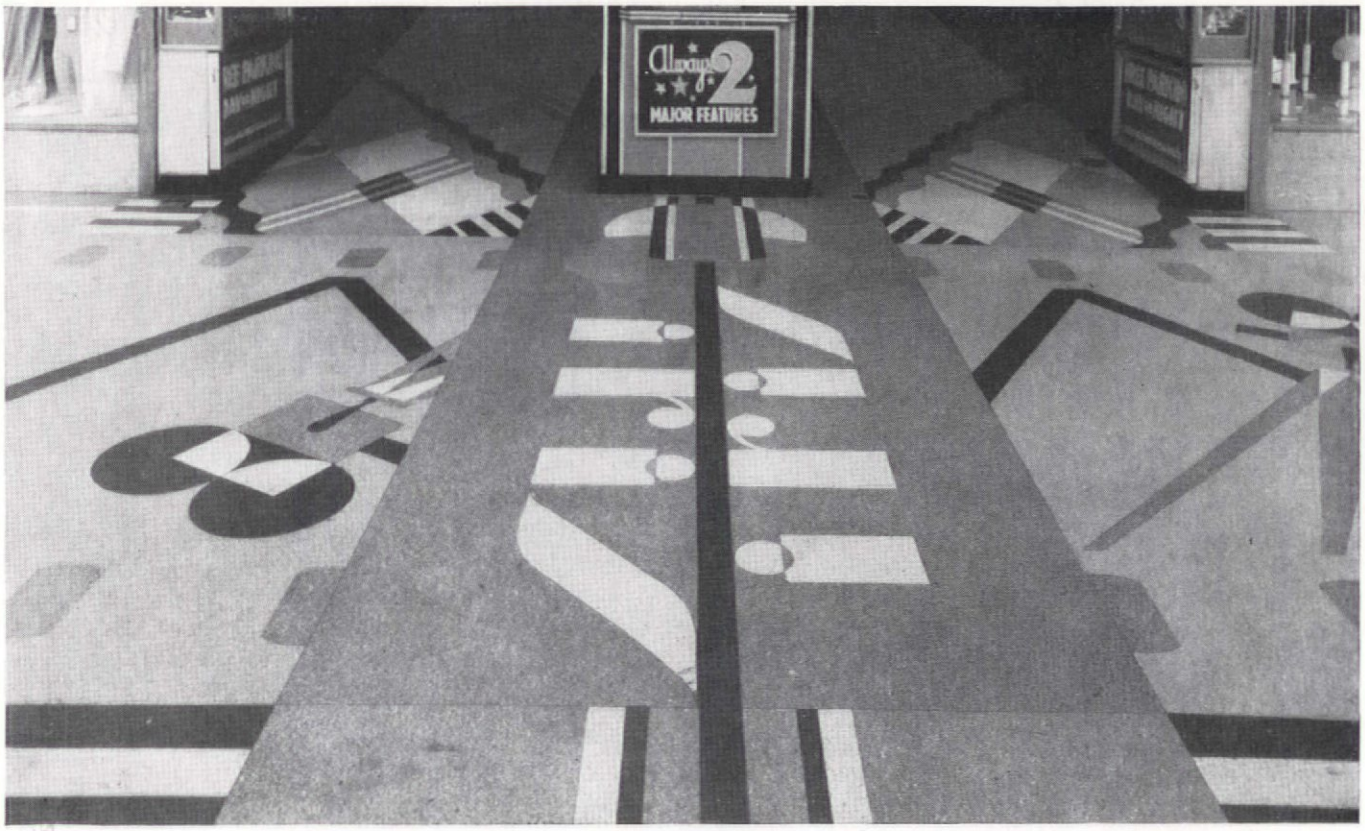
FIRE EXTINGUISHMENT

Garrison Engineering Corporation, Great Barrington, Mass. A catalogue of their fire-fighting equipment which discusses fire hazards and their control.

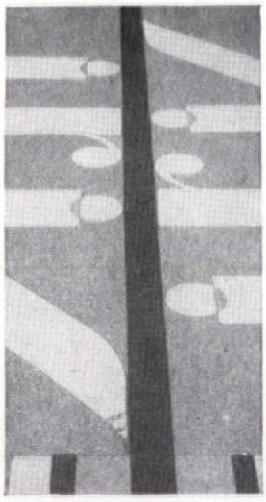
ELECTRIC WIRING

Anaconda Wire & Cable Co., 25 Broadway, New York, N. Y. A handbook briefly describing and illustrating various types of wiring and their uses.

To obtain any of the publications reviewed above, please communicate directly with the manufacturer. The literature can be accurately identified by mentioning this issue of The Architectural Forum.



No Matter What the Use TERRAZZO Does the Job



Day by day, year in and year out, the adaptability of terrazzo floors is winning increasing favor with architects, home owners and building managers.

Architects like terrazzo because of its flexibility. It offers a wide variety of color combinations and patterns that fit any type of construction—whether it be a theater sidewalk like the one illustrated, a residence floor, or a public building lobby.

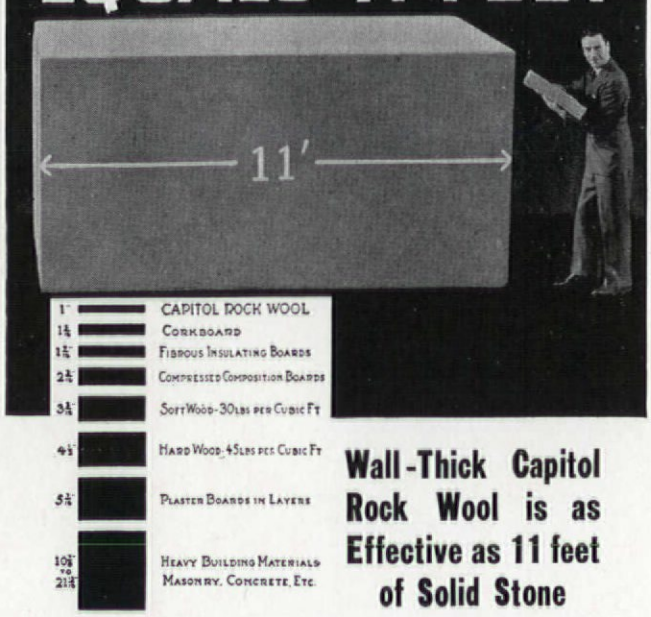
Home owners and building managers like terrazzo floors because they are durable, easy to clean and inexpensive to maintain. Constructed by reliable terrazzo contractors, these floors preserve the beauty of the original design throughout the years, and at less cost than comparable materials.

For further information write or phone your local terrazzo contractor. He is ready and willing to help you plan terrazzo floors for any type of building—no obligation to you, of course. Or write to the Secretary, National Terrazzo and Mosaic Association, Inc., 524 Brook Street, Louisville, Ky., for established specifications for terrazzo.

106

THE NATIONAL TERRAZZO AND MOSAIC ASSOCIATION
SECRETARY'S OFFICE: 524 BROOK ST., LOUISVILLE, KY.

WHEN 3⅝ INCHES EQUALS 11 FEET



Wall-Thick Capitol Rock Wool is as Effective as 11 feet of Solid Stone

YOU CAN BE CERTAIN that Wall-Thick (3⅝″) CAPITOL ROCK WOOL will do an insulation job you can be proud of. Comparatively, it is generally accepted as the most efficient form of home insulation known to science.

In Summer, a home insulated with CAPITOL ROCK WOOL is 8° to 15° cooler. In Winter, drafts are minimized; temperatures are uniform upstairs and down; a smaller heating installation is entirely adequate.

Furthermore, CAPITOL ROCK WOOL is fireproof; sound-deadening; vermin-proof; moisture-resisting; permanent.

The builder can handle it quickly and easily. Manufactured in 15″x23″ batts, it fits between 2x4 studding spaced 16″ or 24″ centers. No wastage; every piece is usable; can be ordered to approximate square footage. Write for our technical data prepared especially for architects' and engineers' files.

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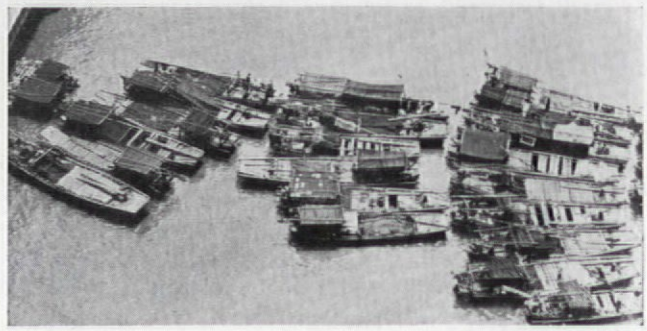
FORUM OF EVENTS

(Continued from page 9)

SHANGHAI HOUSING

SHANGHAI has the most rapid population growth of all the great cities; to this burden has been added the influx of thousands of farmers forced to leave the soil on account of flood or drought. All China needs housing badly; in Shanghai the situation is desperate.

Net result of the deplorable condition of the laboring



Wide World Photos

OLD



NEW

classes was the formation of a Labor Welfare Commission by Mayor Wu Te-chen. Spurred by the energetic mayor, the Commission put up four villages in short order. The houses are of two classes: type A contains a kitchen, toilet, living room, and an upstairs sleeping room; type B has an additional three rooms for larger families. Both types are fire and waterproof, miles above anything hitherto required by the Chinese standard of living. In addition to the homes, community facilities are provided; there are bath houses, cooperative stores, schools, kindergartens, and infirmaries.

An infinitesimal drop in the largest of buckets, the venture nevertheless shows that even China is changing. Most interesting of the facts in connection with the development is that rooms rent for 81 cents a month.

MEXICAN RENAISSANCE

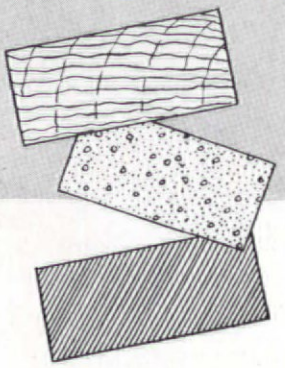
RUMORS of modern work have been trickling up from Mexico off and on during the past few years; some of the young men have been making a stir with their schools and houses. By way of emphatic contrast come photographs of the Teatro Alameda, most super of movie palaces, an achievement which would try the skill of a master pastrycook. The theater is a large one, accommodating audiences of well over

(Continued on page 50)

PORCELAIN ENAMEL ON ARMCO INGOT IRON

As Familiar to Your Clients

AS THESE SYMBOLS ARE TO YOU

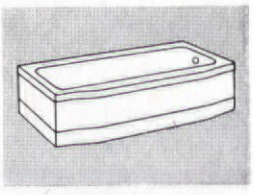


• For years the Armco Triangle has identified high-quality household appliances that have gone into the homes you designed. Now, bearing the same familiar symbol, a new product is offered—formed-metal plumbing ware, which bids fair to gain quick acceptance from millions.

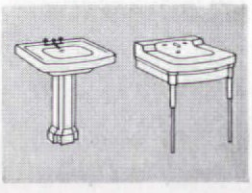
• Armco neither makes nor sells fixtures. Armco *does* supply extremely ductile, heavy Armco Ingot Iron from which these fine fixtures are formed. On this special base-metal is applied a glass-smooth coat of lustrous porcelain made possible by the "wet process" of enameling on Armco Ingot Iron.



• To the architect, formed-metal fixtures offer interesting possibilities of combining colors for new beauty and easier-to-clean equipment in kitchen, bathrooms and laundry. Weighing only ⅓ as much as old style fixtures, formed-metal ware also reduces dead-weight and total construction cost.



• May we send you detailed information on these new greatly improved plumbing fixtures?



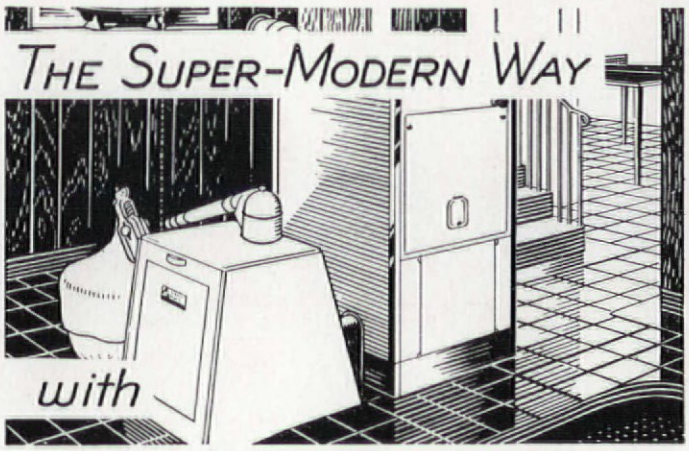
THE AMERICAN ROLLING MILL COMPANY

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ARMCO INGOT IRON

A NAME KNOWN TO MILLIONS

AUTOMATIC HEAT



D&H CONE-CLEANED ANTHRACITE

Clients will appreciate your bringing the advantages of Automatic Heat with D&H Cone-Cleaned Anthracite to their attention.

An electrically operated stoker feeds D&H Anthracite from an enclosed bin to the heater and automatically removes the ashes, giving convenient heat and a continuous supply of hot water during the Winter. In the Summer the same unit can be switched over to supply only hot water.

This thoroughly modern heating equipment enables you to plan an extra room in the cellar for a children's playroom or for parties.

Justify your clients' trust in your professional competence by giving them automatic heat with D&H Cone-Cleaned Anthracite. It is the safest and most economical form of automatic heat.

Correspondence from Architects and Builders is invited by

THE
HUDSON COAL
COMPANY
Scranton, Pa.

LACKAWANNA ANTHRACITE

Producers of D&H Cone-Cleaned Anthracite

FORUM OF EVENTS

(Continued from page 48)

3,000, with a large stage on which ballets and other performances are given. In addition there are the customary lobbies, monumental stair halls, and minor halls. With truly Latin exuberance almost every inch of this vast amount of wall space has been covered with intricate ornamentation.

Collected in the Alameda are reproductions of the architectural glories of Mexico. Romantic Taxco, the richness of



STAIR HALL

Tepozotlan and Oaxaca churches and altars, the grandeur of the palace of Cortes in Cuernavaca, the famous Casa del Alfenique are only a few of the tidbits which astonish the spectator. The extraordinary works which came of the fusion of Spanish Baroque and Indian art are all represented: the tiles of Moorish Granada, the iron grilles of Ronda, the fantastic arches reminiscent of the Manuelino period in Portugal,



Gomez Fagle

LOBBY

when rope and seaweed were the sculptors' chief inspiration, these are subtly merged with that Indian strain which found its expression in geometry on the one hand and a complete dissolution of structural form on the other. In the lounge there are tremendous beams resting on straining columns; thanks to the resources of modern engineering it has been possible to hollow out the beams to receive concealed lights. No expense was spared in the building of this steel and con-

(Continued on page 52)

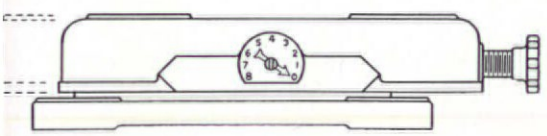
IF YOU CAN AFFORD TO IGNORE *ECONOMY*...

then ignore this page!

e Vari-Pitch Sheave, for Texrope V-Belt ives, represents a vitally important new velopment in the power transmission ld... at a surprisingly low cost it gives u a variation in speed of from 15 to 25% r sheave; if both sheaves are of this type variation of from 30 to 50% is possible.

This means that on such applications as ating and ventilating equipment each fan it can be operated at a variety of speeds, as always to give you the speed best ited to your varying daily or seasonal quirements.

Vari-Pitch Texrope Sheaves are made for tionary and motion control. In the sta- nary control type only a few moments e required to make the adjustment neces- y to give the desired speed. In the mo- n control type the adjustment may be de while the equipment is in operation d is accomplished instantaneously, by ply turning a hand wheel.

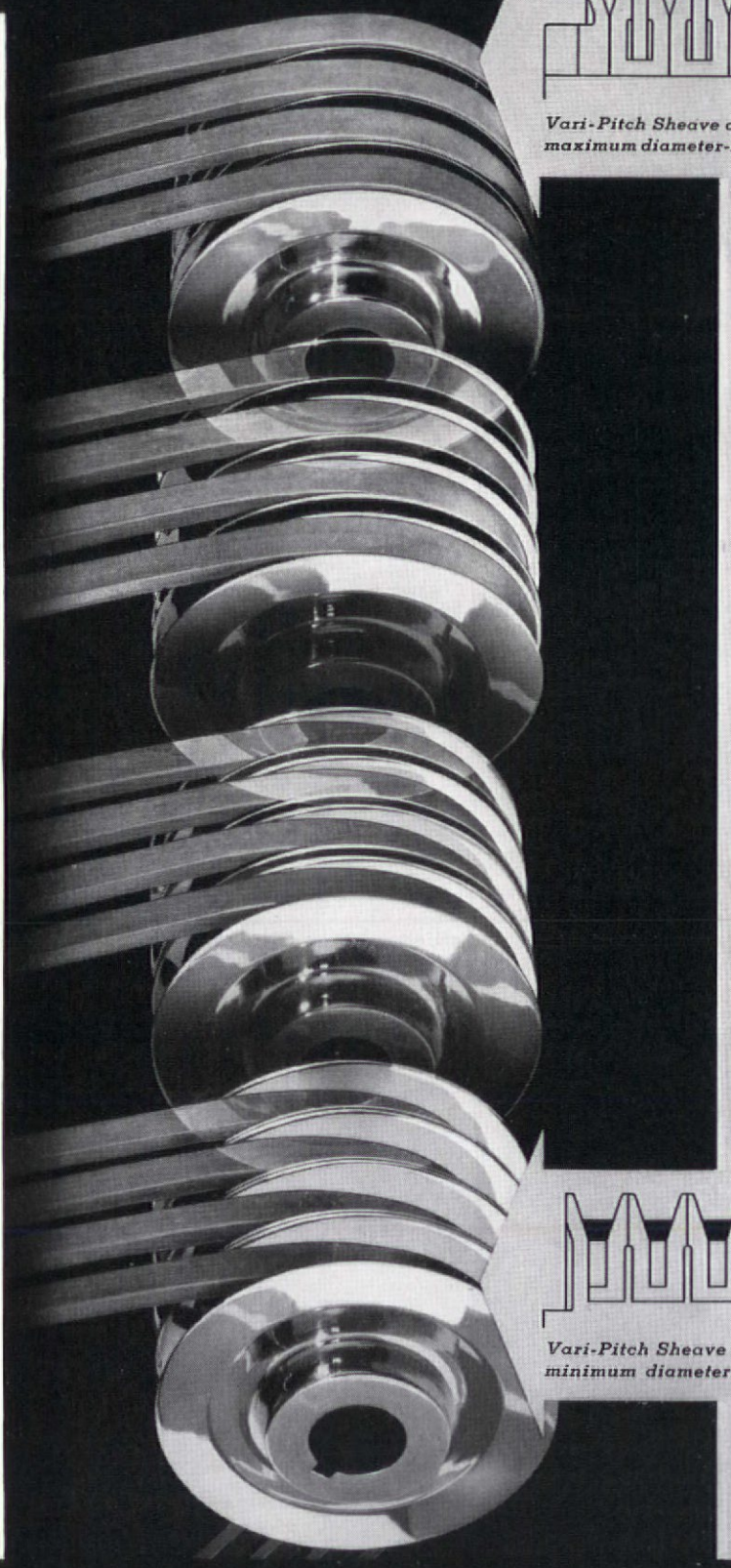


uitline Automatic Ball-Bearing Motor Base devel- d for the motion control Vari-Pitch Sheave. You ply turn the hand wheel to alter the diameter of the ave and simultaneously the base moves forward or kward to maintain proper belt tension. Write for i-Pitch Bulletin No. 1261.

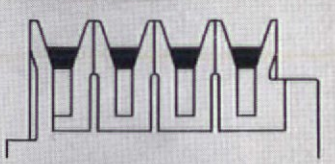
Belts by Goodrich



Vari-Pitch Sheave adjusted for maximum diameter-high speed.



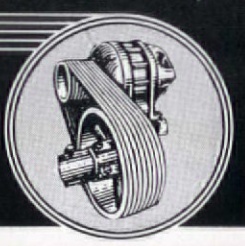
15% TO 25% VARIATION IN SPEED



Vari-Pitch Sheave adjusted for minimum diameter-low speed.

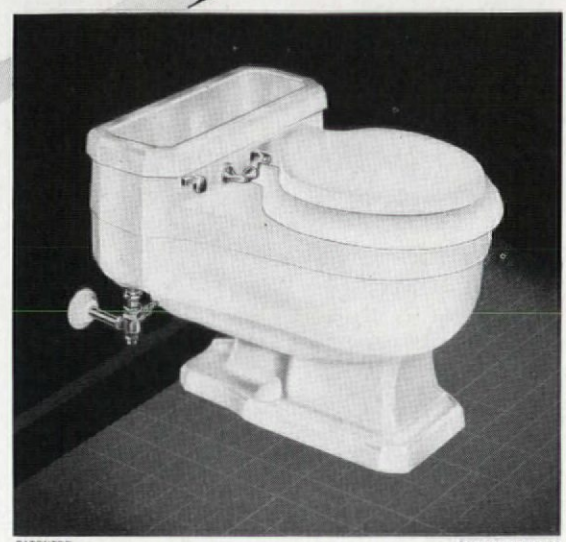
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Quiet
Powerful
Flushing



PATENTED PATENTS PENDING

Powerful flushing action and amazing quietness are just two of the features that make the T/N one-piece water closet the favorite of so many architects and home builders. There are others, of course . . . non-overflow, atmospherically vented to prevent water supply contamination, no wall is needed for attaching, and the T/N's modern and beautiful design is quickly noted. Made of the finest twice-fired vitreous china, and the number of available colors is almost legion. Little wonder that the T/N one-piece water closet has become an almost unanimous choice. Priced so you can include it in the most modest of your home plans.

T/N ONE-PIECE WATER CLOSET

W. A. CASE & SON MANUFACTURING COMPANY Founded 1853
Dept. E-86, 31 Main Street, Buffalo, N. Y.

Please send me complete descriptive literature and helpful data on the T/N One-Piece Water Closet, both for REMODELING and NEW HOMES.

(Continued from page 50)

crete structure, and the impression of solidity given by the intricate archways and rugged masonry work may be attributed to the use of plaster everywhere instead of papier-mache.

Arching over the air conditioned auditorium is a plaster sky, acoustically treated to soften the reverberations of the mighty Wurlitzer. The last word in lighting equipment lets the dawn come up like thunder over Oaxaca, stars flicker like stop and go signs, Don Eduardo Vigil y Robles and his band of 50 "profesores" turn on the heat as a rose-pink sunset fades away, lights are dimmed in the facades at the sides, and the curtain goes up on Mickey Mouse.

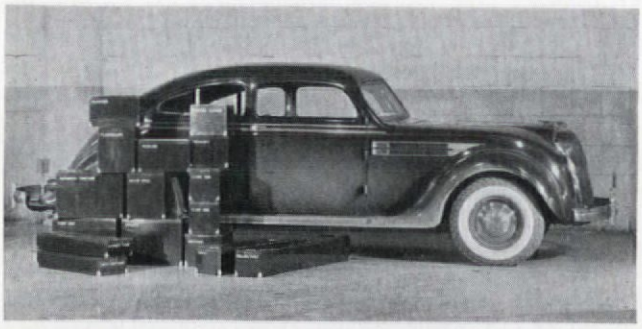
HOSPITAL ON WHEELS

MEDICAL care in the more sparsely settled regions of the U. S. has always been something of a problem; the services and equipment of up-to-date hospitals in such areas are non-existent. With no precedent to follow and with the realization of a pressing need as his incentive, Doctor Thomas Foster Wheeldon, whose patients are scattered all through Virginia's mountain sections, designed this portable hospital. Within a sedan of conventional size are contained 16 aluminum cases, holding surgical instruments, medicines, operating clothes, fluroscope, X-ray apparatus, bandages, and the other essentials of his profession.



INTERIOR

For the long drives between sick beds the traveling doctor has a specially constructed steering wheel which allows him to drive with one hand and operate a dictaphone with the other so that no time is wasted in the recording of case histories and dictation of correspondence.



DOCTOR WHEELDON'S HOSPITAL

HODGE PODGE HOUSE

INDIGENOUS American architecture has occasionally assumed some striking, even fantastic forms, but for this remarkable expression of the collector's urge there are few known parallels. Once part of a group of four such edifices, it is now a unique landmark in Atlanta's dark town: the other three fell before a Government slum clearance project.

The rarity of this type of architecture is doubtless responsible for the lack of definite knowledge about it; the

(Continued on page 54)



CUTTING COSTS IN CONCRETE-FRAME ERECTION

To render a design faithfully, at minimum cost, requires maximum re-use of forms and elimination of costly delays. This is often difficult to achieve, because of the non-productive time consumed while ordinary Portland cement becomes self-supporting.

Through a basic advance in cement-making, 'Incor'* 24-Hour Cement cures or hardens thoroughly, in one-fifth the usual time. That means working strengths in 24 to 48 hours, instead of 5 to 10 days. Forms are released, ready for re-use, 4 to 8 days sooner. Form requirements are reduced, construction is simplified, non-productive time is eliminated. Substantial savings result. And these savings afford the designer greater opportunity to realize the utmost in beauty and utility within a given total cost.

For simple method of calculating savings through the use of 'Incor' on buildings of 1 to 16 stories, write for free copy of new, illustrated book, "Cutting Construction Costs." Address Lone Star Cement Corporation (subsidiary of International Cement Corporation), Room 2209, 342 Madison Avenue, New York. Illustrated above is Kavanagh Building, Buenos Aires, world's tallest reinforced concrete building—cement furnished by International's Argentine subsidiary.

*Reg. U. S. Pat. Off.

'INCOR' 24-HOUR CEMENT



House in Beaumont, Texas. Ben E. Irby and Harry R. Woodside, Architects, Beaumont. Walls painted with Cabot's DOUBLE-WHITE, blinds with Cabot's Green Gloss Collopakes.

Don't be Afraid of GREEN

No longer need the architect hesitate to specify *green* for blinds. Cabot's *non-fading* Green Gloss Collopakes have succeeded the treacherous unstable greens of former years . . . . . Cabot's greens hold their color because they contain no fillers. They have greater hiding power and longer life because of the patented Collopaking process which divides the pigment from 100 to 1000 times finer than ordinary grinding methods. If you are not already using these satisfactory greens, mail coupon below for color card and complete information.

Cabot's Collopakes

THE COLLOIDAL PAINTS

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Manufacturing Chemists

SAMUEL CABOT, INC.
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Gentlemen:

Please send me color card and full information about Cabot's Green Gloss Collopakes.

Name .....

Address .....

AF-8-36

FORUM OF EVENTS

(Continued from page 52)

technique, however, is apparently to assemble pieces of terra cotta, door frames, marble, grotesques, granite slabs, rubble stones, bathroom tile, broken bottles, and similar materials,



William Dunn

ARCHITECTURAL MELANGE

inserting them into walls chiefly composed of humbler masonry.

The late builder, a "rock mason," frequently fell into the toils of the law due to excessive zeal in the collection of exotic material. In the end, however, legend has it that he reformed and became a pillar of the church.

ANNOUNCEMENTS AND AWARDS

THE American Institute of Steel Construction has chosen the three most beautiful bridge spans erected in the past year.

In the "monumental" group of bridges costing $1,000,000 or more, first award went to the North Grand Island Bridge over the Niagara River at Niagara Falls, N. Y. Plans were prepared by Waddell and Hardesty and George C. Diehl, Inc.

In the group costing between $250,000 and $1,000,000, first award was given to the Lorain Road Bridge across Rocky River Valley at Cleveland, Ohio. It was designed under the direction of the Ohio Department of Highways.

For smaller bridges, first place went to the Mortimer E. Cooley Bridge over the Manistee River near Wellston, Michigan. The design was by L. W. Millard.

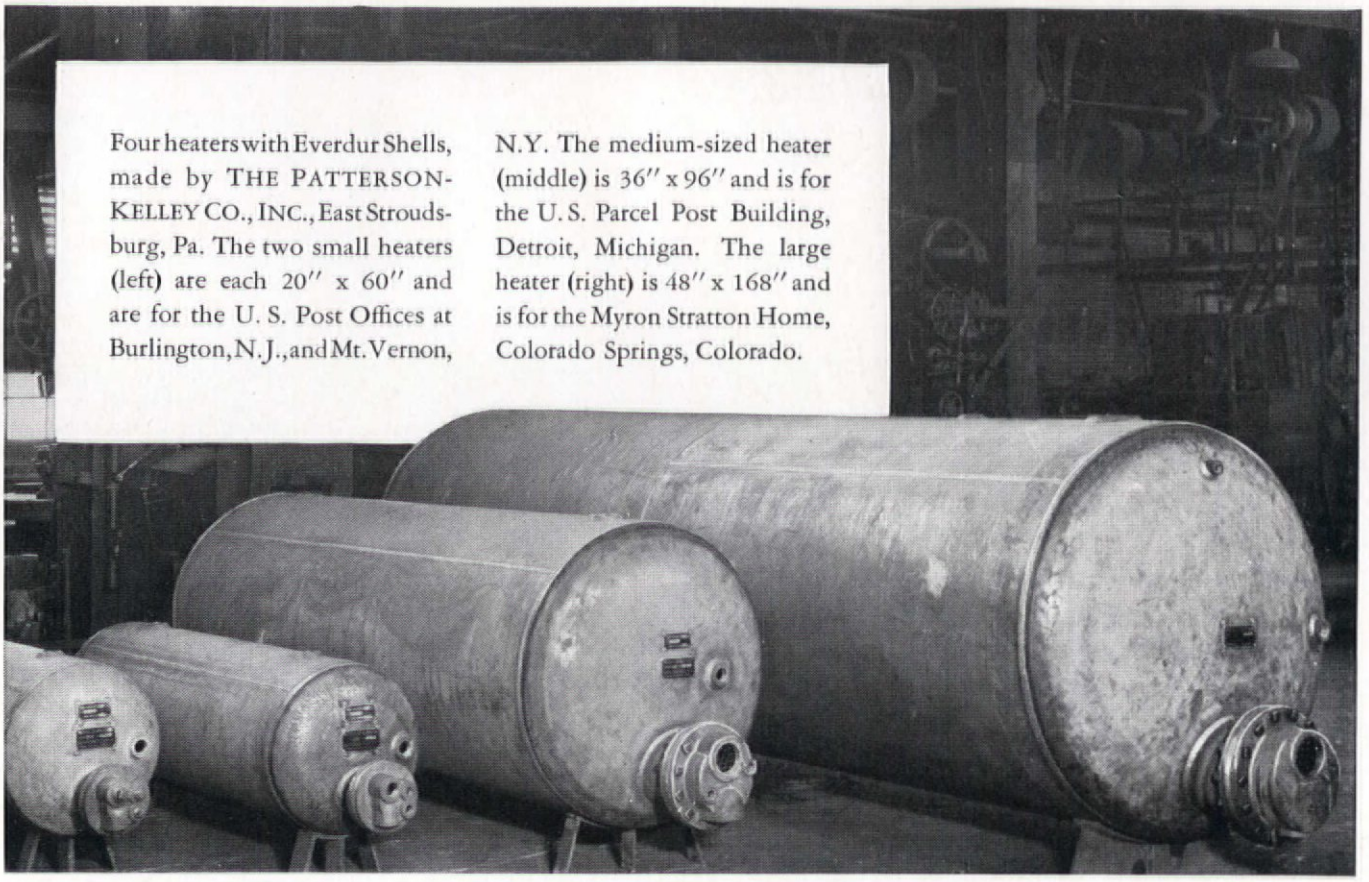
The John Stewardson Memorial Traveling Scholarship in Architecture for 1936 has been awarded to S. Robert Anshen of Ambler, Pennsylvania, a graduate student in the Department of Architecture, University of Pennsylvania. The subject of the thesis was "A National Center of Learning" on the Potomac.

The Navy Department announces an examination to be held to select vacancies in the commissioned grade of assistant civil engineer, Corps of Civil Engineers, with rank of lieutenant (Junior grade). Full information may be obtained from the Chief of the Bureau of Yards and Docks, Navy Department, Washington, D. C.

Bringing together for the first time a complete exhibition of power developments and resources, a "Panorama of Power" will be assembled in Washington, September 7-12, in connection with the Third World Power Conference. Featuring elaborate models and pictures, the exhibition will be housed in the New National Museum on Constitution Avenue.

The next meeting of the North American Conference on church architecture will be held October 9, 1936, in the Cathedral of Saint John the Divine, New York City. Among

(Continued on page 56)



Four heaters with Everdur Shells, made by THE PATTERSON-KELLEY CO., INC., East Stroudsburg, Pa. The two small heaters (left) are each 20″ x 60″ and are for the U. S. Post Offices at Burlington, N.J., and Mt. Vernon, N.Y. The medium-sized heater (middle) is 36″ x 96″ and is for the U. S. Parcel Post Building, Detroit, Michigan. The large heater (right) is 48″ x 168″ and is for the Myron Stratton Home, Colorado Springs, Colorado.

NON-RUST STORAGE HEATERS OF

EVERDUR METAL . . . *Strengthened Copper*

reduce maintenance costs . . . assure rust-free water indefinitely

These four Patterson Combined Hot Water Service and Storage Heaters . . . all with solid Everdur shells . . . are destined for buildings in four different states. Proof again of the growing acceptance of Everdur as the ideal metal for non-rust water heater shells!

From small residential range boilers to giant storage heaters for hotels, laundries, hospitals, etc. . . thousands of Everdur tanks are giving rust-free, repair-free service—saving money for owners because Everdur *cannot* rust. This rugged copper-silicon alloy possesses remarkable corrosion-resistance, yet it has the strength of steel . . . and is readily welded by all usual methods. Our new publication E-10 contains complete information on Everdur Metal for tanks and heaters.

* * *

Equally logical and satisfactory are many other uses for Everdur. Among them: air-conditioning equipment, masonry anchors, drains and ducts, electrical conduit. Additional data on any use of Everdur gladly sent on request.

ANACONDA
from mine to consumer

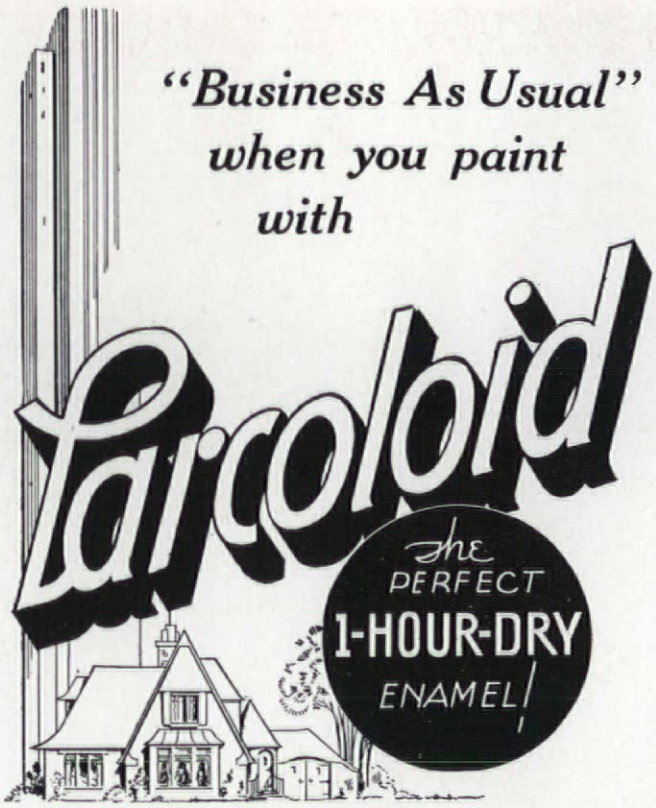
EVERDUR METAL
"Everdur" is a registered trade-mark identifying products of The American Brass Co. made from alloys of copper, silicon and other elements.

36131-A

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EVERDUR METAL *for* TANKS

A COPPER ALLOY WITH THE STRENGTH OF STEEL



EVEN the smallest paint job is often a disturbing factor in the office or business. It often means loss of hours in a smooth-running factory or a real annoyance in theatres or public buildings.

Not so when Larcoloid is the architect's choice. Here is a finish that lives up to its reputation . . . ever and always a ONE-HOUR DRY Enamel. No need to postpone the paint job when Larcoloid is used. The business may carry on as usual . . . no expensive machinery shut-downs occur in factories when the wheels of industry must keep turning! No signs "Closed for repairs" where the theatre motto is "The show must go on!"

Best of all, in spite of the fact that Larcoloid dries in one hour, it works easily, flows out smoothly, producing one of the most durable coatings possible . . . second only to baked-on enamel.

Learn the facts about Larcoloid. See the color card. Your inquiry will receive our prompt attention.

Larkin Co Inc. Buffalo, N.Y.
Paint Division

Larkin Co Inc., Buffalo, N. Y.

Please send me complete information (including color card) about LARCOLOID, the outstanding all-purpose Enamel.

*Name*_____

*Address*_____

*Town*_____ *State*_____

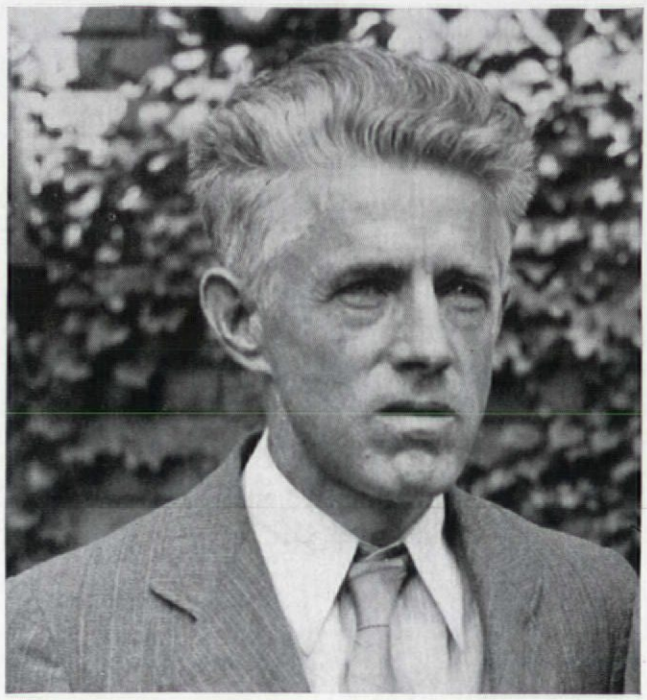
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FORUM OF EVENTS

(Continued from page 54)

those who have been invited to address the conference are Ralph Adams Cram, Professor Leopold Arnaud of Columbia, and Francis S. Onderdonk of the University of Michigan. All architects and others interested are invited and may obtain further information from E. M. Conover, 105 East 22nd St., New York.

DEATHS



HENRY WRIGHT, 58, architect and city planner, after a week's illness at the Newton Memorial Hospital, Newton, N. J.

Henry Wright was born in Kansas, in 1878. After graduating from the University of Pennsylvania in 1901 he immediately entered the active practice of housing and town planning.

In the field of urbanism and town planning, an irreparable loss results from his premature death. Brilliant and original on the technical side, his profound grasp of planning principles led him to provocative new solutions as compared with empirical methods current. His genuine respect for progress and knowledge as a whole; his generosity and inspiration to younger men in housing; his belief in the essentially collaborative nature of significant work—these have imbued his associates with new ideals and with the courage to fight for them.

To him, architecture and town planning was not a competitive profession but a way of working in collaboration with others—dovetailing abilities and talents regardless of credit or pay. Frequently in these associations it was Wright who furnished the spark, the brilliant clue. It was not a matter of appropriating glory, but of each contributing what he was best fitted to do. He worked with Clarence Stein planning the Sunnyside housing developments in Queens, Radburn, N. J. and Chatham Village at Pittsburgh, Pa. Later, with Albert Mayer and Henry Churchill, he worked out the Greenbrook, N. J. project of the resettlement administration. In addition much recent housing owes its character to him, either because he was an employed consultant or an informal

(Continued on page 58)

FROM THE HOME OWNER'S STANDPOINT

What Whiting Owners Say:

MORE THAN HUMAN — "Since the stoker was installed we hardly know we have a heating plant, and the house is more evenly heated. It is more than human."

REAL SERVANT — "I consider the stoker a real servant. It not only saves time and the trouble of making a fire each morning, but it is also much more economical than the old way."

QUIET — "The stoker is neat in appearance and quiet in operation. I highly recommend it to any home owner wishing an even temperature at low cost."

MONEY SAVER — "The year prior to installation of your stoker the cost of coal was $296.75—and the year after only $182.38 (2-family flat building)."

SUB-ZERO WEATHER — "For 6 years the average oil used amounted to $633.28 per year (small bank building). This year with a Whiting the cost was only $235.00" (the severe winter of 1935-36).

AUTOMATIC — "The trouble-free, automatic features are especially appreciated by Mrs. Wilson, who never has to go to the basement any more."

NO SMOKE OR ODOR — "We are enjoying a more uniform and even heat. Our home is free from odor, soot and smoke."

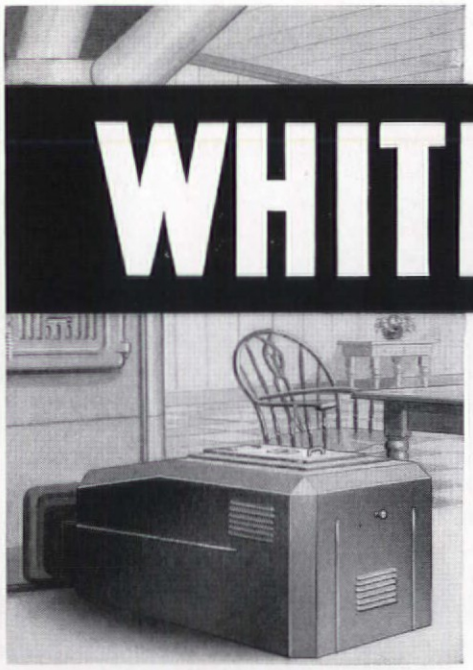
COMFORT — "Most comfortable winter we've ever known. The Whiting is quiet, clean and inexpensive."

ECONOMICAL — "The Whiting reduced my fuel bill 40%. My wife and maid never touch the heating plant any more."

FOR EVERY HOME — "My coal bill's half what it was last year. I am glad to recommend the Whiting Stoker to the man of medium means."

NO ASHES — "Enabled me to 'dress up' my basement and really enjoy it, rather than have it cluttered up with coal dust and ashes."

PAYS ITS OWN WAY — "Savings will easily pay for the cost of the stoker over a three-year period."



WHITING STOKER

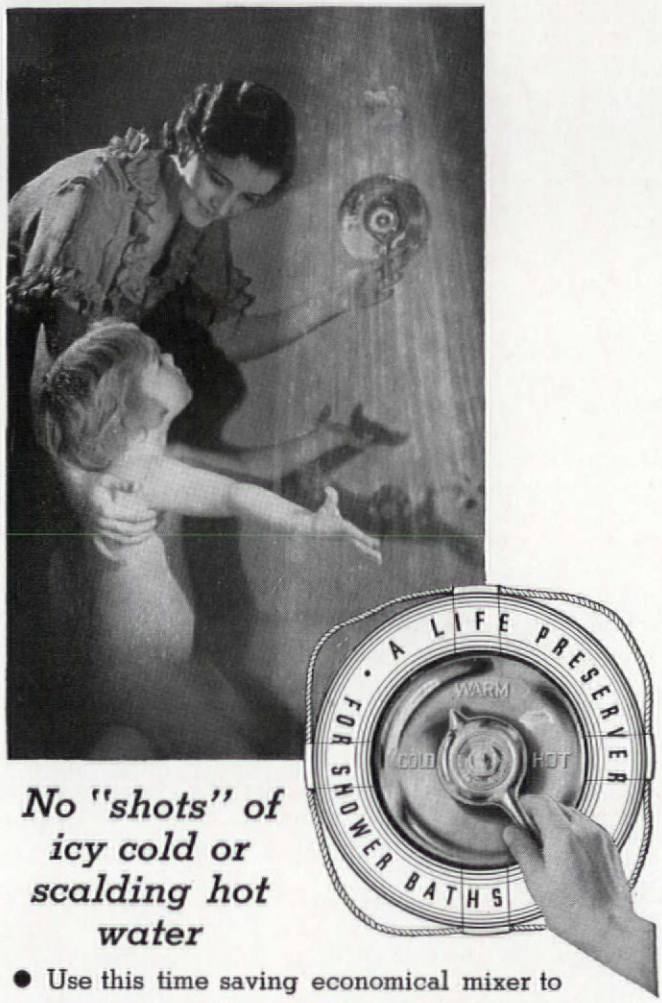
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AT A LOWER COST

AUTOMATIC COAL BURNERS
FOR ANY FURNACE OR BOILER

WHITING CORPORATION
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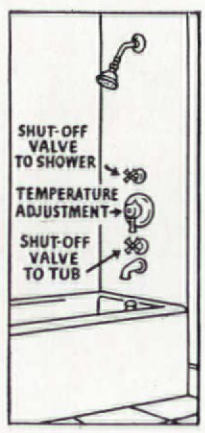
No "shots" of icy cold or scalding hot water

● Use this time saving economical mixer to provide thermostatic control for both shower and tub bath. To fill tub with water at any certain temperature simply close shut-off valve to shower and open valve to tub. Then turn handle of mixer to supply water at the temperature desired.

●

Write for Bulletin No. 258 which gives details of this and many other types of Powers safety water mixing valves for all kinds of shower baths.

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Name_____

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FORUM OF EVENTS

(Continued from page 56)

adviser influencing the methods of those in direct charge.

Important as has been his contribution to the current physical scene—his vital influence on younger men in architecture and town planning is of even greater significance. In his informal summer schools at his farm; his town planning atelier at Columbia (recently established through a long term grant); his lecture courses at Illinois, Carnegie Tech., Boston Tech., etc.—he was constantly priming the young men of talent and imagination with his enthusiasm.

Active in professional circles he was a fellow of the A. I. A., chairman of the Committee on Community Planning of the A. I. A. one of the founders of the Housing Study Guild, onetime chairman of the City Planning Association of St. Louis, and housing consultant to PWA and resettlement administration.

Though he scarcely visualized it in those terms, the acid character of his technical analysis of existing work and the implication of his simple direct planning theories have started those whom he influenced along the path of revolt leading toward enlarged conception of town planning.

GEORGE PROVOT, 67, architect, after a long illness, at the French Hospital, New York City.

George Provot was born in New York City, in 1869. He studied for nine years in France, where he received a B. S. degree in 1886. At Columbia, three years later, he received a Ph. B. degree in architecture. For a while he was a member of the architectural firm of Welch, Smith and Provot. Later he practiced alone. He was architect for the old French Hospital and for extensive alterations to the Hotel Brevoort, both in New York.

In addition to being secretary, treasurer and director of the Potter & Provot Realty Company and director of the Gerbereux Realty Company and the Vauban Realty Company, he was an associate of the American Institute of Architects, member of the French Benevolent Society, French Club, and the Columbia University Club.

HARRY CREIGHTON INGALLS, 60, architect, after a four weeks' illness at his home at Larchmont, N. Y.

Harry Creighton Ingalls was born in Lynn, Mass. and was a graduate of the Massachusetts Institute of Technology and the Ecole des Beaux-Arts in Paris. He practiced architecture in New York for more than twenty-five years.

Theaters and private residences constituted his principal work. He designed the Plaza Theater, the homes of James Deering at Miami, Fla., Mrs. Henry Phipps at Palm Beach, that of Dudly Olcott at Southampton, L. I., and Leonard A. Thomas in New York.

He belonged to the American Institute of Architects, the Architectural League of New York, and Delta Kappa Epsilon fraternity.

GEORGE W. PHILLIPS, 91, architect, at his home in Suffern, N. Y.

George W. Phillips was born in Oxford, England, March 1, 1845. After studying Gothic and collegiate architecture there he went to Kings College, London. He came to New York shortly after the Civil War and taught drawing with the late Mr. Melville.

One of the oldest members of both the General Society of Mechanics and Tradesman and the New York Chapter of Architects, he designed the Yaddo house for Spencer Trask at Saratoga; Tri-yaddo for Mr. Trask at Tuxedo, and Tewkesbury House. Among the interiors he did were those of the

(Continued on page 60)



Overwhelming preference proved by recent survey



• People who really know paint know that for durability and beauty, pure white-lead and oil cannot be surpassed. Among architects, for example, it is the overwhelming choice... proved again by a recent survey made by the Forest Products-Better Paint Campaign.

Architects in all parts of the country were asked what paint they generally specified for exterior wood surfaces. When the returns were compiled the vote was 3 to 1 in favor of pure white-lead. The reason for this preference is white-lead's proved record of performance ... its traditional ability to stand up for long periods under the most severe weather conditions.

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Dutch Boy White-Lead—good paint's other name — has long been known and respected for its high quality both by property owners and those who deal with paint professionally.



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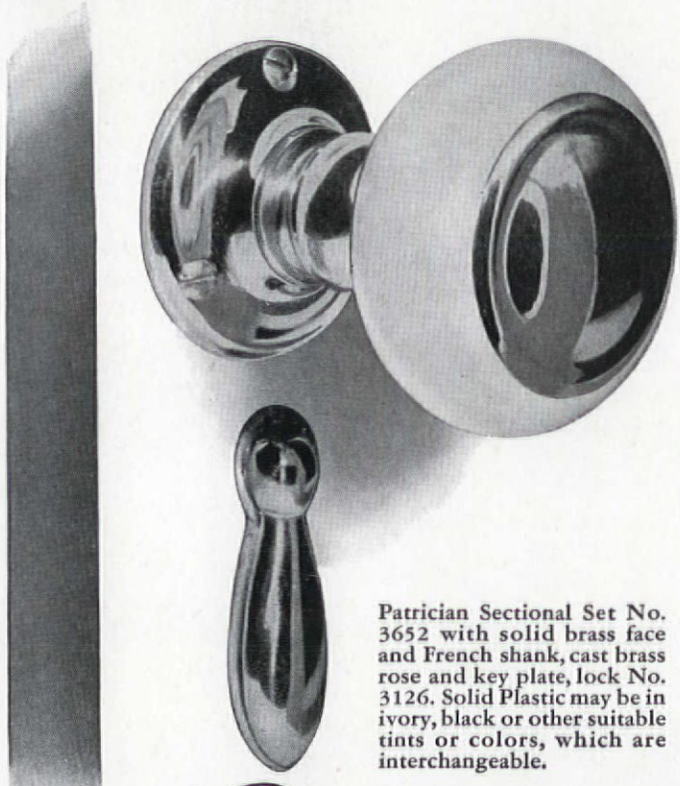
The JUDGE decided then and there

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Graceful blending of plastic color material and natural metal finishes makes possible a decorative motif true to the last detail. Standard in black or ivory, Patrician also offers delicate pastel tints for boudoir or bath—mahogany or Chinese red for game-room or bar.

Patrician is more than beautiful, it is practical. The jewel-like lustre of this new hardware will not tarnish or fade, nor is it affected by perspiration. Moisture does not affect it—stains wash off.

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FORUM OF EVENTS

(Continued from page 58)

Paulist Fathers' Church at New York. He was the first to introduce the teaching of drawing in the New York public schools and obtained the first patent for the folding steamer chair.

CHARLES ROHLFS, 83, designer, after a long illness, at Buffalo, N. Y.

Charles Rohlfs was born in New York, in 1853. Active in the manufacture of furniture, he conceived what is generally known as mission furniture. Later he developed "Rohlfs" furniture.

Before he became a designer, Mr. Rohlfs was an actor. He appeared in support of Booth, Barret and other American tragedians. Furniture which he had made for his own home was so successful that by 1896 he devoted all his time to its design and manufacture.

He was a member of the Royal Society of Arts, London, and the only American invited to exhibit furniture at an exposition held in Turin, Italy.

MAXWELL HYDE, 58, architect, after a year illness in his home, at New York City.

Maxwell Hyde graduated from Columbia University where he received a Ph. B. degree. Among the buildings he designed were the Hospital of Deformities, the Hebrew Sheltering Guardian Home, the Hawthorne School, and the Caroline Rest at Hartsdale, N. Y.

HANS POELZIG, 68, architect, at Berlin.

Hans Poelzig was one of the outstanding German architects, moved to the background when the Nazis declared war on modern architecture. Professor Poelzig was at one time director of the Dessau Art School. He was also a leader of Prussian art in the high schools. In 1933 he resigned as vice president of the Prussian Art Academy as a result of personal feelings in regard to activities of the Belgian government.

PERSONALS

AT the annual banquet of the Illinois Society of Architects, Elmer C. Jensen (member of the firm of Mundie & Jensen, Chicago) was reelected president for the third term. Arthur Woltersdorf is first vice president, George Helme is second vice president.

William G. Herbst was reelected president of the Wisconsin chapter of the A. I. A. by the new executive board at its recent annual meeting. Richard Philipp was reelected vice president and Alexander C. Guth was reelected secretary-treasurer for the thirteenth time.

Edward E. Probst, Marvin G. Probst, and Wellington J. Schaefer wish to announce the opening of the office of Probst and Probst, for the practice of architecture, with offices in the Field Building, Chicago.

Henry V. Murphy, architect, announces the removal of his office from 208 Livingston Street, Brooklyn, New York, to the Williamsburgh Savings Bank Building, One Hanson Place, Brooklyn, New York.

In Cleveland an advisory committee of 15 architects has been appointed to work in conjunction with the city planning commission. The committee includes Franz Warner, chairman, C. W. Kuehnx, R. Harris, E. Milton MacMillin, W. R. McCormick, G. Evans Mitchell, J. E. Reeb, George Smith, F. R. Walker, Travis Walsh, Joseph L. Weinberg, and Eric Wojahn.

ARCHITECTURALLY SPEAKING

by

OTIS ELEVATOR COMPANY

WE FEEL we have some very interesting and useful information to offer in this issue. It will come under the head of "Specification Units." Heretofore, a hoistway has been indicated somewhere up through a structure and elevators ordered to fit the space. This is an old-order system, going back to the early days of elevatoring when no two buildings were alike and the elevators were just sort of "fitted into" the building.



THERE IS no reason why elevators shouldn't be made uniform to a certain degree. There are many buildings that go up with similar elevator needs, either passenger or freight. Using some eighty-four years of elevator experience to guide us, we are now prepared to produce a number of different Specification Units. Each is built to predetermined standards to fit the needs of a given type of building. If, for instance, a small apartment house is suited to Unit 110-P, that elevator will be furnished under a specification which has already been proved under actual conditions as fulfilling the exact requirements. These Specification Units give complete assurance that component parts are absolutely suited to each other, and form a complete, harmoniously working unit. They assure the purchaser that he will have an elevator installation which has been proven to be ideally suited to his building.



HOW WERE Specification Unit standards arrived at? It required long experience and an extensive study of layouts of elevators in thousands of buildings, with consideration as to the building needs, before it was possible to find that there were certain elevator duties and platform sizes that were in greater demand than others for certain types of buildings. For instance, with the capacities and car speeds determined from this study, it was found that the platform sizes varied only by a few inches for similar conditions. Then on passenger elevators the matter of the elevator doors was a major factor, together with other practical considerations in determining the most desirable width of the platform. When the width was thus settled, the depth was determined mathematically by consideration of the capacity. This will give you an idea of how standards for Specification Units are established.



WE URGE you to keep these Specification Units in mind and use them wherever possible. We think they will place the business of ordering elevators on a more practical basis. We feel the trend should be more and more to this type of installation.



AND NOW an entirely different subject. It is universally accepted that Two-Speed A. C. Control is not entirely satisfactory for elevators from the standpoint of performance. We are now offering a new machine for the medium-range duties which will take alternating current supply and convert it to multi-voltage direct current operation. This machine is very compact and can be furnished at prices comparable to Two-Speed A. C. Control.

7 REASONS

Why Architects Specify OIL-O-MATIC

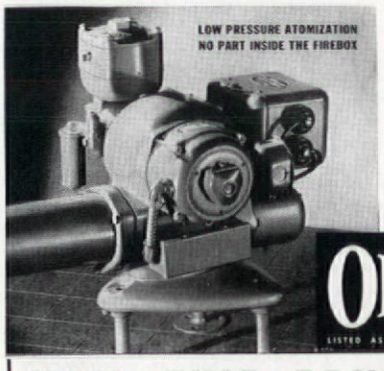
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2. Has it *projected flame* burning in mid-air away from the burner, with all mechanism outside the combustion chamber away from the heat?
3. Has it *diffusor* to insure, with any oil, a perfect blending of oil and air, producing a steady, unwavering flame?
4. Has it positively operated automatic safety shut-off valve?
5. Will it burn the economical, heavier, low-priced fuel oils?
6. Has it metering pump feeding unvarying quantity of oil regardless of viscosity or temperature?
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BOOKS

(Continued from page 26)

state initiative as being more efficient. The limited dividend corporation both here and abroad comes in for a detailed examination, and the systems of cooperative action by individual owners in a block or group of blocks are favorably commented upon. One thing is certain, the housing unit "must change from the 25 x 100 foot lot of the old-time builder to that of an entirely new neighborhood planned for traffic, community parks, playgrounds, and all other features that go to make up a system of living rather than mere shelter." This approach is identical with that of the "Rent to Space" articles currently appearing in this magazine.

There is a valuable appendix by I. N. Phelps Stokes which contains an historical résumé of housing in New York, with plans and descriptive notes showing the development of the tenement house. There are also complete bibliographies of general material on housing and housing in New York City.

The importance of this book cannot be minimized. It indicates what type of data must be collected as the basis of housing endeavors, and reviews past mistakes and achievements. For all its bulk it is easy—even exciting—reading, and should be of vital interest to the architect who is concerned with seeing his profession assume a position of authority in a field where it might do a tremendous amount of good.

ARCHITECTURAL COMPOSITION by Nathaniel Cortlandt Curtis, J. H. Jansen, Cleveland, 284 pp., illustrated, 10¾ x 7, $6.00.

Professor Curtis' book, originally brought out in 1923, is too well-known a treatise on the theory of composition to require detailed description. The new edition, enlarged and revised, includes a section on modern architecture. An interesting feature of the new section is a parallel of ancient and modern architecture with positive and negative characteristics of each summarized in a revealing fashion. By recognizing the importance of contemporary work, the book's value to the student is considerably increased.

GRAPHIC DESIGN by Leon Friend and Joseph Hefter, Whittlesey House, New York, 11 x 7¾, 407 pp., illustrated, $7.50.

A comprehensive and well illustrated survey of the graphic arts, covering their history, development, and present day status. Chapters on lettering, printing, reproduction, photography, book design, advertising, the poster, and education give the book an authority and completeness that is almost encyclopedic.

PLANNING by E. and O. E., The Architect and Building News, London, 13½ x 9½, 304 pp., illustrated.

A collection of planning notes which have appeared in "The Architect and Building News," an English weekly. The notes are designed for quick reference and give something of the type of information presented in "Architectural Graphic Standards," with considerably more text, however, and less in the way of drawings. Its organization differs from that of the usual reference book in that its various sections are divided according to building types. Advertisements are located between the chapters, thereby gaining usefulness as part of the reference material.

(Continued on page 64)

. . . "Grit got my goat" . . .



Says President of
University of Venusia*

Tells how he cured himself of Scratchitus

"AS a psychological study we gave half a class ordinary pencils for 10 days, the other half Venus Pencils.

"The students were of equal dumbness and did not suspect our test. I know what Venus pencils have done for me, saving me from more than death.

"So I wanted to watch, laboratorily, the reactions of those less intelligent than I.

"But the experiment had to be curtailed at the end of the first day—the users of ordinary pencils as a group became unmanageable.

"It seems that Scratchitus, which comes from gritty pencils, is suffered in silence by countless individuals, but as a group disease it almost causes rioting.

"Our experiment proves conclusively that groups such as office people cannot get along using ordinary pencils, unless coerced. Venus Pencils, we find, are uniformly smooth, never gritty, never scratch."

** Copies of the President's findings, unabridged, unexpurgated, will be sent upon request. But today buy some Venus Pencils and save yourself from Scratchitus.*

for the best in colored pencils ask for VENUS COLORING—thin, strong, smooth.

VENUS
PENCILS 10¢
17 SHADES OF BLACK

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This absolute precision in grading makes each one of the 17 shades of black always identical.

Elaborate supervision and a costly system of tests guard this Venus superiority, so important to you.

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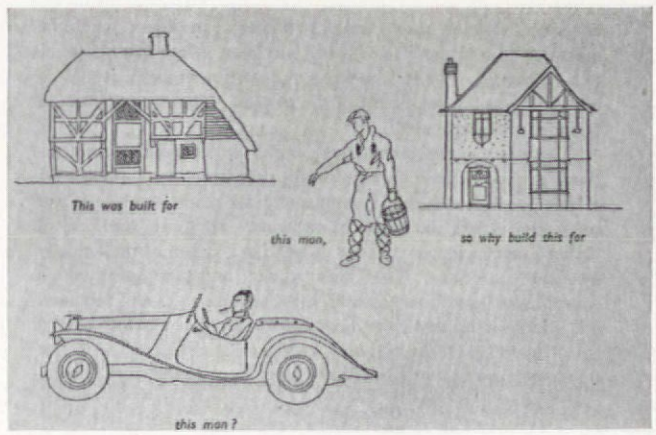
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BOOKS

(Continued from page 62)

THE HOUSE: A Machine for Living In, by Anthony Bertram. A. & C. Black Ltd., London. 115 pp., illustrated. 7¼ x 9½. 5s.

LeCorbusier's now-famous phrase is taken for the title of this provocative little book. "A Summary of the Art of Homemaking Considered Functionally," it is an appreciation of the modern house as a return to sound architecture, and an historical study of the house as a functional expression of certain activities at various times. The most pointed arguments offered by the author are the illustrations, charming little drawings which show the development of windows,



entrances, furniture, heating contrivances, etc. The page on windows, for example, shows the change in windows from slits in castle walls to the glass walls which can be built today (it also shows the twentieth century version of leaded glass!). This pictorial method of illustrating an idea has much to commend it; certainly in a book of this nature, whose purpose is to give the lay reader a clear idea of what a changing world is doing to architecture, no better means could have been employed. While very brief, the text contains a wealth of interesting data on the evolution of the house, its ideas are clearly and pungently expressed, and, though written for the layman, makes excellent reading for the architect who has anything to do with the design of houses.

BAU-ENTWURFSLEHRE by Prof. Ernst Neufert, Bauwelt-Verlag, Berlin S W 68, 12 x 8¾, 300 pp., illustrated, M19.80.

This so-called manual of building is one of the most extraordinary collections of architectural and related data that has ever been assembled between two covers. It contains information on town planning, size of luggage, accommodations for animals and foreign machinery, factories and shop plans, furniture design, orientation of buildings, sizes of china and silverware, studies of school plans and stock sizes of almost everything required in a house, and theories of proportion. While the value of the book to an American architect might be considered dubious since measurements are in meters, the text is in German, and much of the equipment shown is of a type not used in the U. S., so vast a quantity of material is presented, and so clear and stimulating are the drawings that the user will find the book a continuous and exciting source of information and inspiration.

(Continued on page 66)

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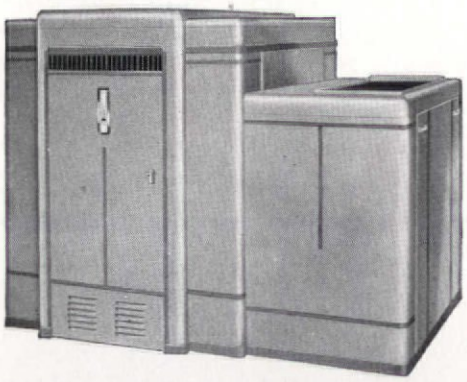
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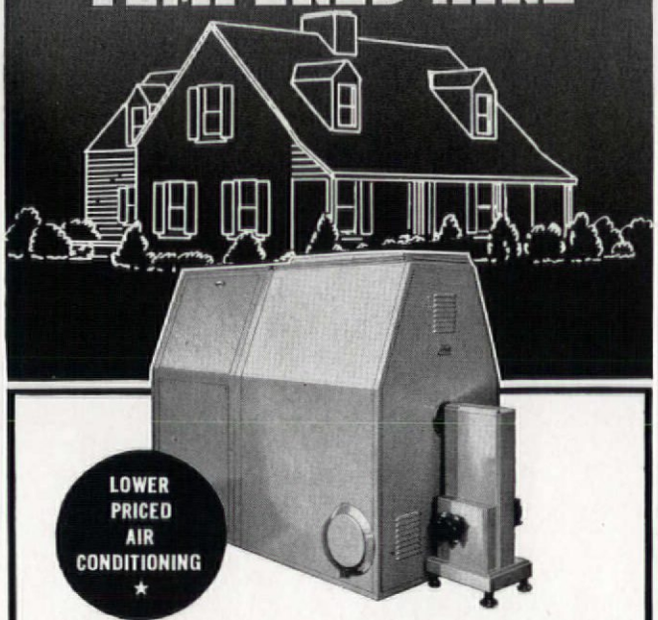
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The Model 102-A burns No. 3 grade oil and owners say Gar Wood oil heat costs less than coal. With all of these price advantages, Tempered-Aire is thoroughly logical for low-cost homes. Write for full particulars, including details of our cooperation with architects through our field engineering staff. We also have systems for homes of any size, including indirect or "split" systems, and a full line of oil burners and water heaters.

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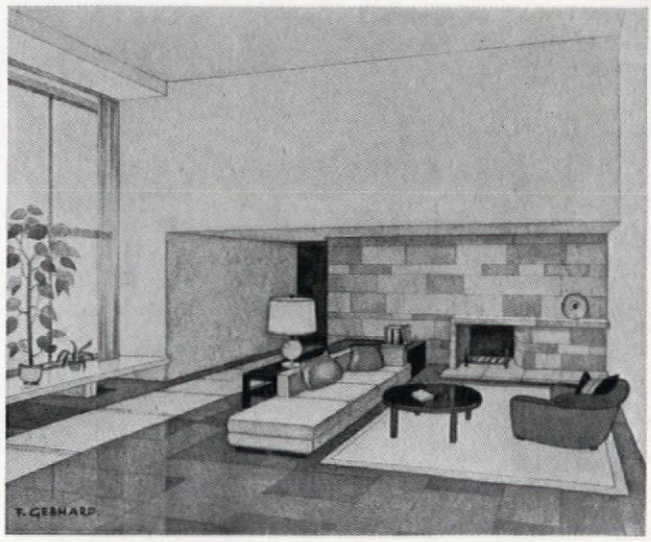
AIR CONDITIONING DIVISION
GAR WOOD INDUSTRIES INC.
DETROIT ★ MICHIGAN

BOOKS

(Continued from page 64)

COLOUR DESIGNS FOR MODERN INTERIORS, The Architectural Press Ltd., London; Julius Hoffmann, Stuttgart. 9½ x 11¾, 80 plates in full color, 42s.

The history of color in interiors is the story of an almost universal appreciation of one of the best means of decoration ever devised, an appreciation which in the seventeenth and eighteenth centuries rose to great heights. But for all the sureness and brilliance of color in old interiors, the problem today demands a solution which is more than faithful copying. The change from richly ornamented costumes to the plainer clothing of the present time, the growing tendency to open rooms to the sun by the use of large windows, and the



LIVING ROOM

increasing simplicity of interiors are all contributing factors. The eighty beautifully reproduced plates in this volume show some of the recent work conditioned by these factors; of the greatest variety in conception and execution, all nevertheless show awareness of the changes that have taken place. It would be hard for even the most prejudiced observer, after an examination of these rooms, to persist in the opinion that the modern house interior is of necessity cold and barren.

EQUIPMENT AND FITTINGS FOR SMALL DWELLINGS: International Housing Association. Julius Hoffmann, Stuttgart. 2 vols., 243 pp., 9 x 11¾.

An attempt to organize all available information on construction, equipment, and fittings used in housing projects in Europe and the U. S., with the purpose of making available to planners accurate information on innovations tried in new projects. The need for the dissemination of such information is obvious, and a collection such as this makes possible the rapid development of minimum cost housing and widespread use of new and better solutions of the problems common to all projects of this sort. There is a wealth of information for the planner here, and the drawings in the volume of plates, beautifully made and reproduced, are in the manner familiar to architects who are already acquainted with other publications put out by Julius Hoffmann.

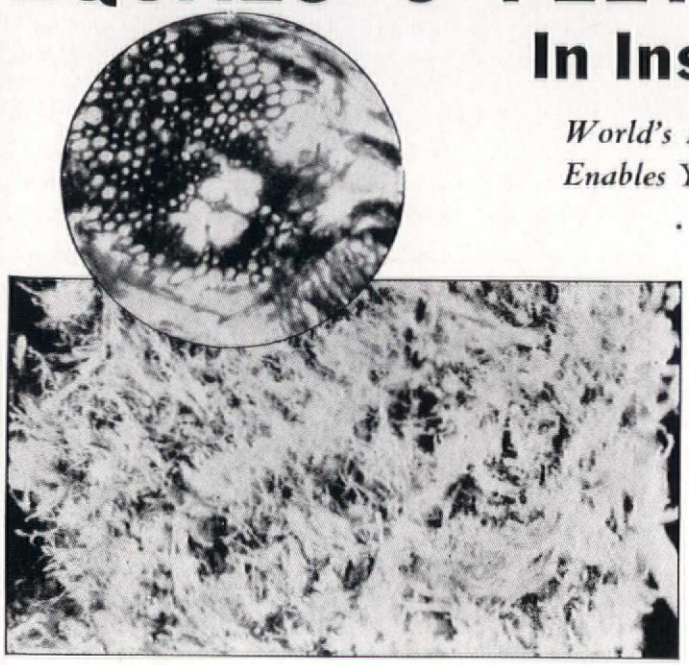
(Continued on page 68)

Read Why

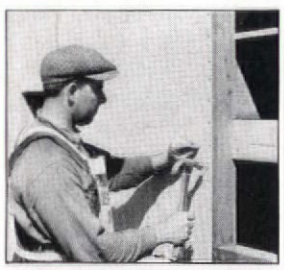
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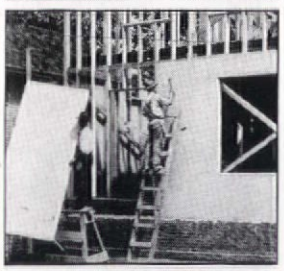


(Above) *Millions of sealed air cells within the fibres of Celotex are a natural bar to heat transmission. Open network of strong Celotex fibres means increased air space—increased insulating efficiency.*



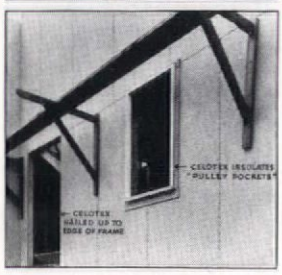
Celotex is easily cut and fitted with ordinary tools—nails firmly into place—stays put permanently.

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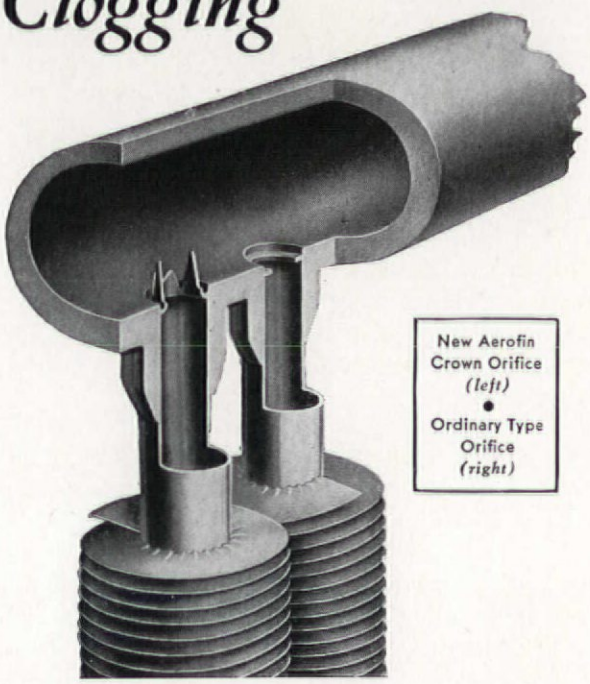
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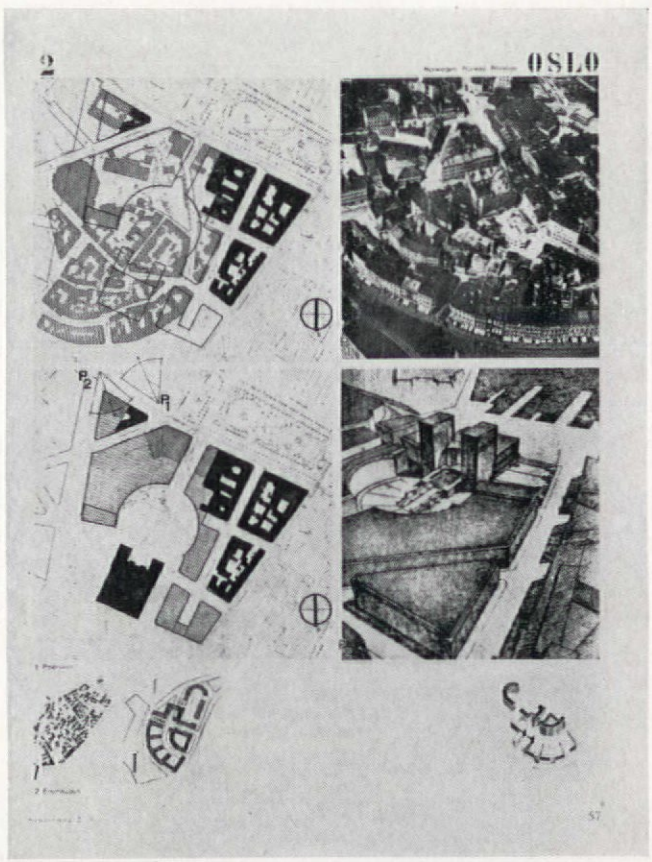
(Continued from page 66)

MALLET'S INDEX OF ARTISTS, by Daniel Trowbridge Mallett. R. R. Bowker Company, New York. 493 pp., 7¼ x 10¼. $12.00.

A biographical record of the leading artists of all countries and all periods, containing about 27,000 names. The index gives the artist's name, pseudonym, nationality, place and year of birth and death. Key letters and numbers give common reference works and volumes of biographical information.

SLUM CLEARANCE AND RECONDITIONING OF INSANITARY DWELLINGS: International Housing Association. Julius Hoffmann, Stuttgart. One volume text, one volume plates. 289 pp., 9 x 11¾.

One of the very valuable publications of the International Housing Association, which has previously studied small houses, the social importance of housing, and housing in various parts of Europe. This book is a collection of data



TYPICAL PAGE

on slum clearance projects throughout the world, with descriptions of the methods adopted in each case, legal restrictions, and extent of the work. The second volume, containing illustrations, shows plans of the sections described, with views before and after demolition. A most important document on one of the most vital phases of the housing problem.

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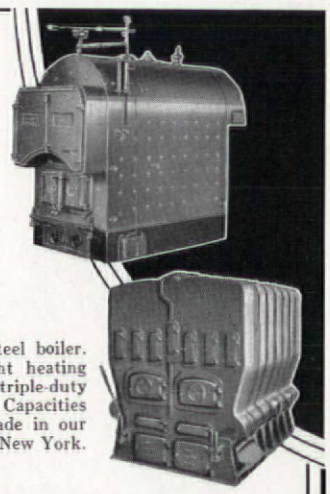
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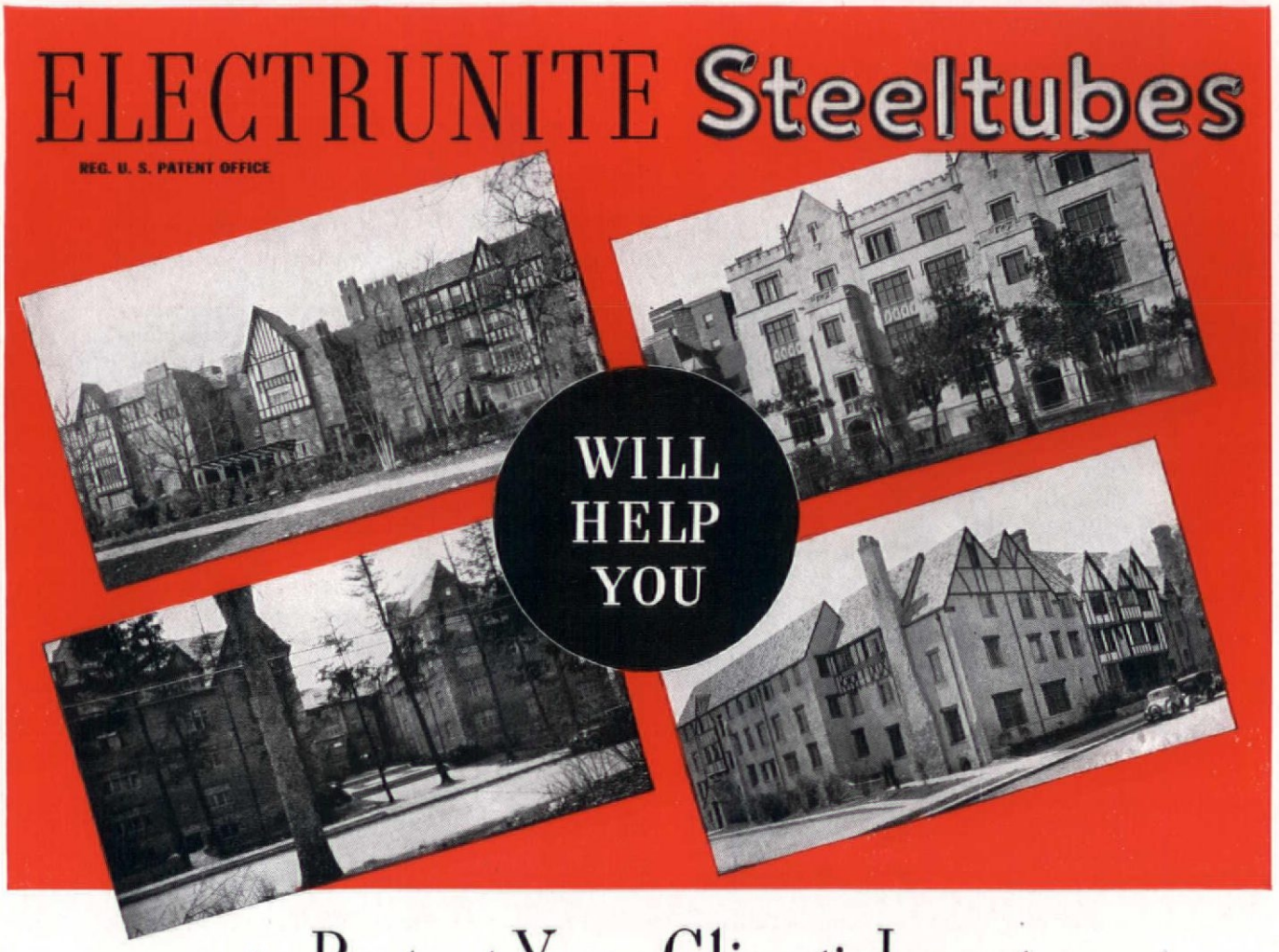
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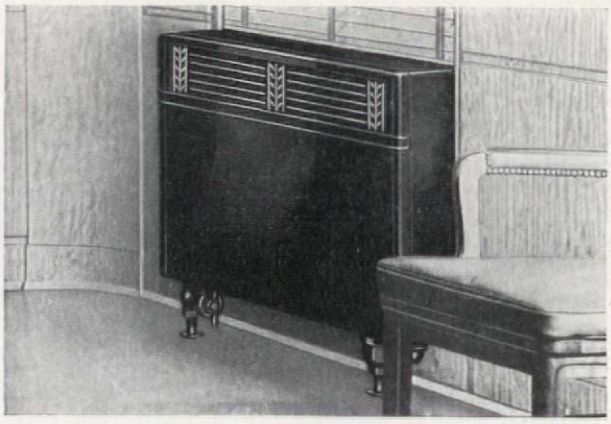
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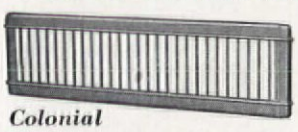
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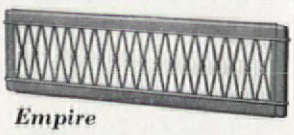
The Wall Cabinet Type Convector is ideal for offices, stores, schoolrooms, where recessing is not practicable.

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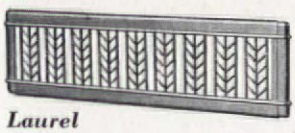
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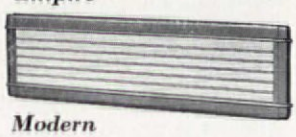
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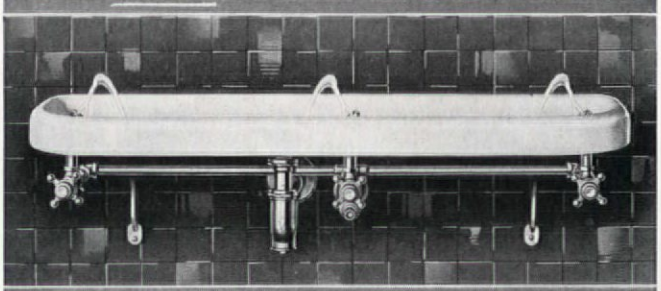
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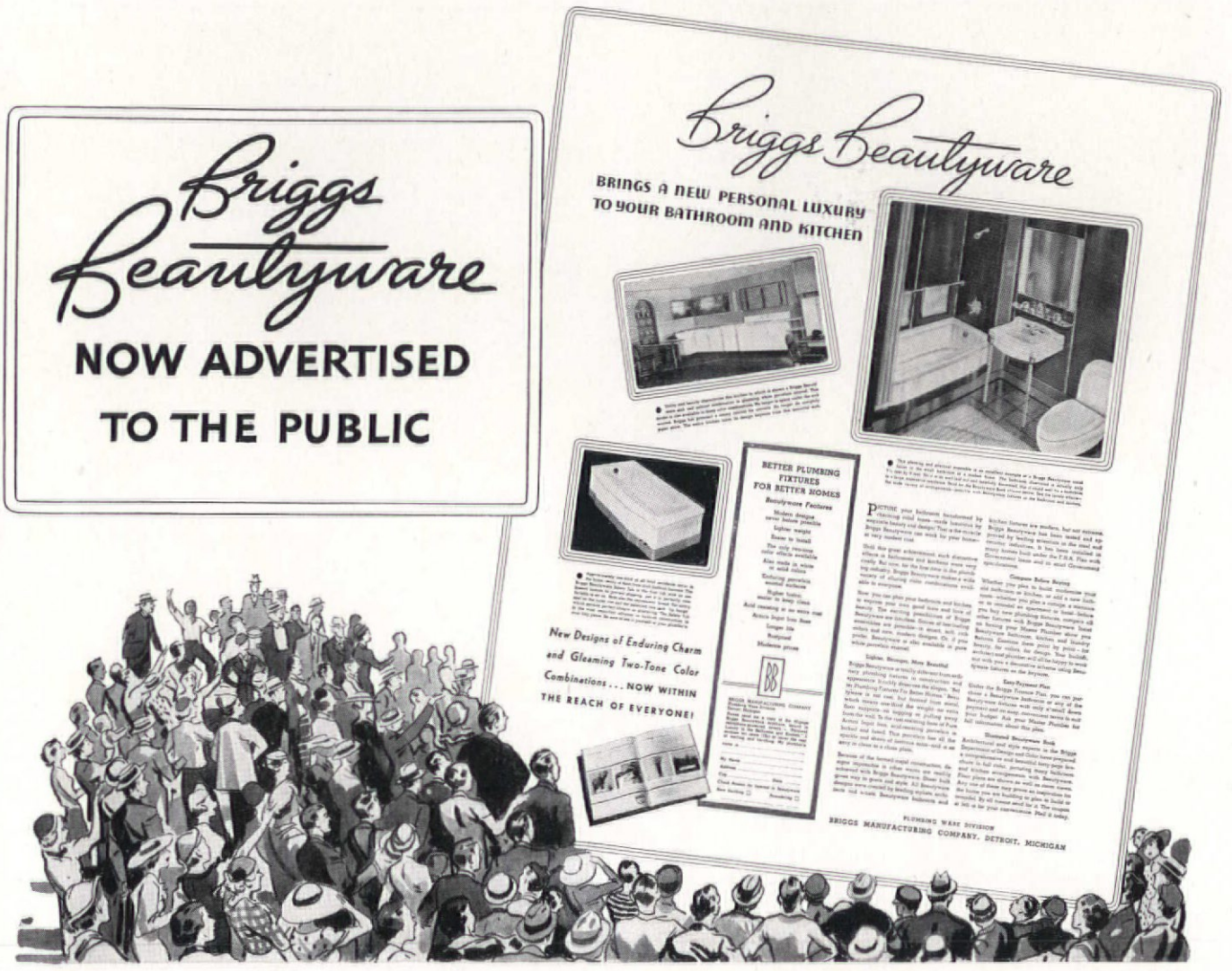


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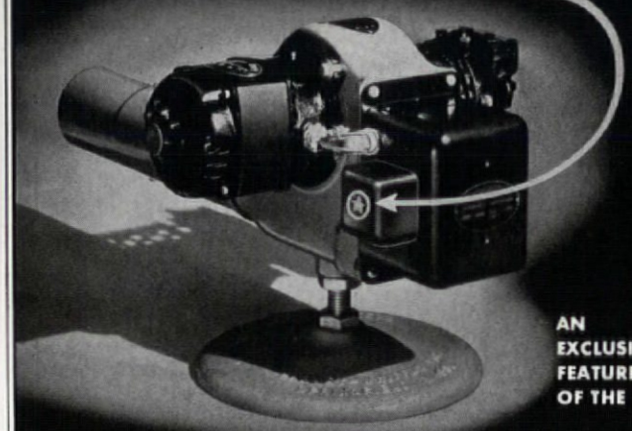




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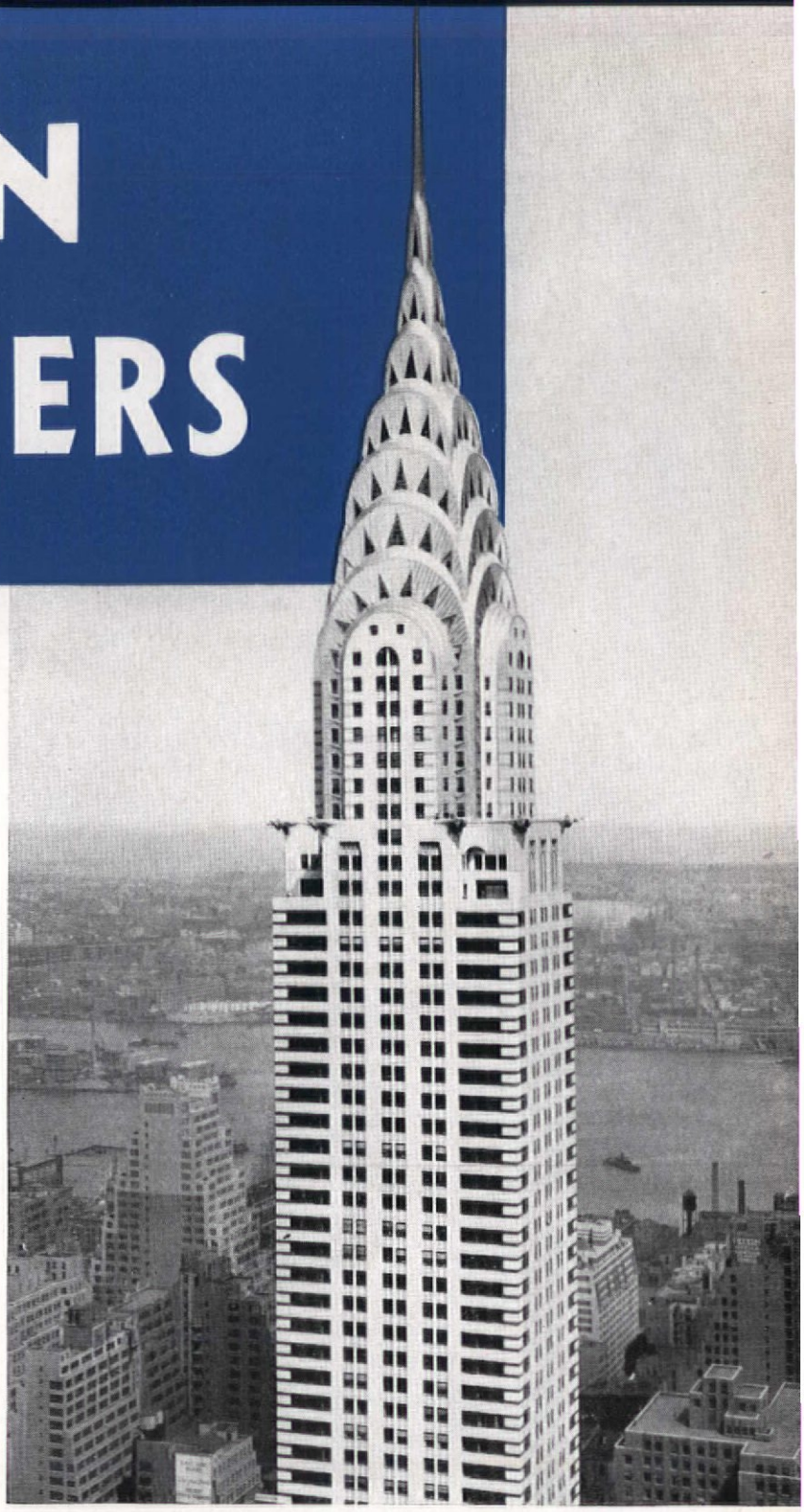
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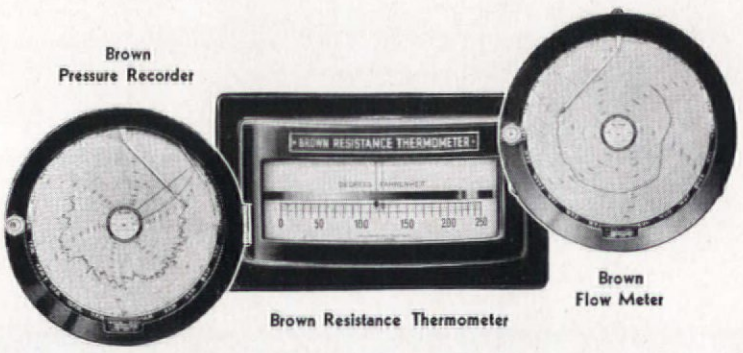
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THE ARCHITECTURAL FORUM
135 EAST 42ND STREET
NEW YORK, N. Y.



Otto Jaehnert, superintendent Mueller's sheet metal shop, shows Harold Mueller the nameplate for the new Series Twenty Air-Conditioning Oil Furnace.

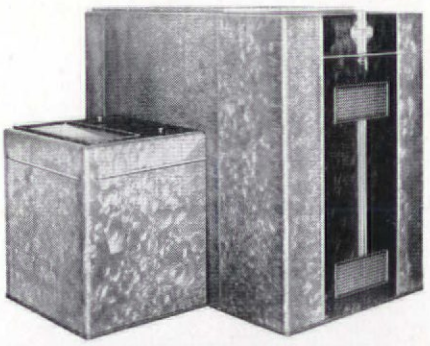
FATHER WOULD HAVE APPROVED

THE other day we finished tests on the new Mueller Air-Conditioning Oil Furnace. The Series Twenty we call it, and it is a beauty.

When Ed. Jones, our Chief Engineer, and Otto Jaehnert, superintendent of the sheet metal plant, showed me the results, I couldn't help but imagine how elated my dad and grandfather would have been at the achievement.

They dedicated their lives to improving the heating systems of American homes and they left that heritage to *me*. Things have changed a lot in the heating business in the last decade, but I have tried to carry on with the standard of leadership which they set.

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The Series 20 consists of furnace, fan, filters and air moistener. For full details see "Series 20" Folder.

Let me send you our folder describing this new furnace. And don't forget that Mueller still makes the most complete line of heating equipment in the industry, including gas, oil and coal-fired furnaces and boilers, and Climator Air-Conditioning equipment.

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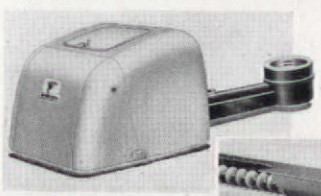
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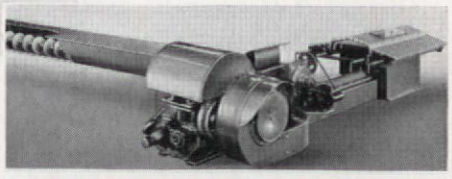
"BIN-TO-BURNER" FUEL FEEDING WITH THE AUTOMATIC BUTLER COAL STOKER





Above. "Self-Coaling" Model 55 for residential installations. (Dust-tight, sectional steel Butler bin optional)

Below: Commercial Model 46 "Self-Coaling" with side fuel feed from bin



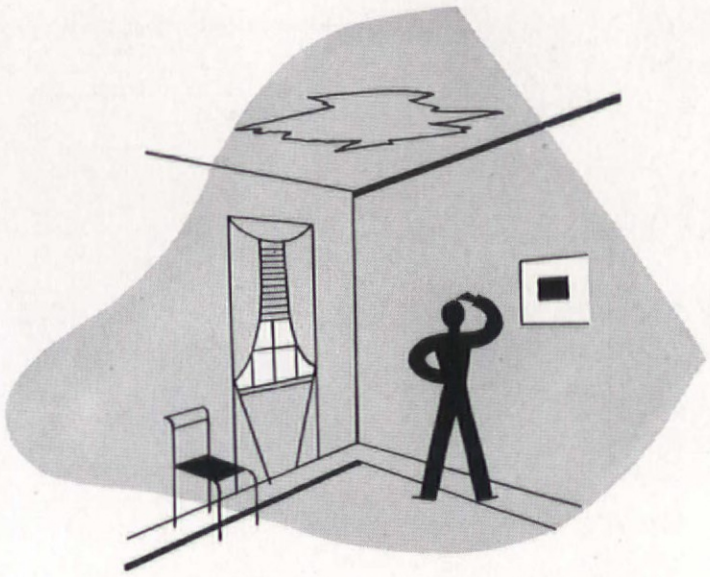
Above: Streamlined Hopper Model 37, for attractive installation in finished basement.



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Actual installations of Butler "Self-Coaling" units over a period of more than 2 years have proven the practicability of this sound method of "Bin-to-Burner" fuel feeding Installation flexibility is increased with dust-tight, sectional Butler metal bins (optional) which may be set up in basement or outside underground Write today for full details and specifications of both residential and commercial units.

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There was the house and it looked thoughtfully planned, solidly built. But unsightly, dismaying to its owners was the patch of cracked plaster that kept reappearing over a large area of the living room ceiling.

Helpful friends said new plaster had a way of doing that. The owner summoned the plasterer. Guiseppe, the plasterer, shrugged helplessly as at a natural "act of God" misfortune.



An architect could have explained. An architect could have prevented it in the first place. But there hadn't been an architect. The owner had used some ready-made plans which "just needed a bit of juggling around." In the juggling, the bathroom had been shifted just enough so that all the weight of heavy plumbing was poised on one floor beam. Trouble to come.

It's human to try to save when you build or remodel. But unwise saving spells trouble later. It is unwise to think you can "get along" without a good architect.

No architect would be fatuous enough to promise that his services can work magic on every inch of plaster, wood, brick, paint. The architect is no magician. But he is a specialist in a dozen departments of building. He is the one man who can watch over the dozen from blue-prints to moving in; who can watch out for trouble spots, plan to prevent them.

A good architect knows materials, costs; he checks on stress and strain spots; he represents your interests in comparing estimates. He is an expert on the unseen vitals of a house—the plumbing, heating, insulation, drainage—mysteries to most lay people. Sometimes he can save you enough to pay his own fee. Often he can spare you disappointment—that keenest of personal disappointments when something goes wrong with the house you've waited for, saved for, dreamed of.



It's penny-wisdom to skip the architect —for in his brains, skill and experience lies your safest insurance.

THE ARCHITECTURAL FORUM

Published by TIME Inc., 135 East 42nd Street, New York City

THIS ADVERTISEMENT APPEARED IN TIME AND FORTUNE AND IS ONE OF A SERIES BY THE ARCHITECTURAL FORUM IN THE INTEREST OF BETTER BUILDING

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TIME

The Weekly Newsmagazine

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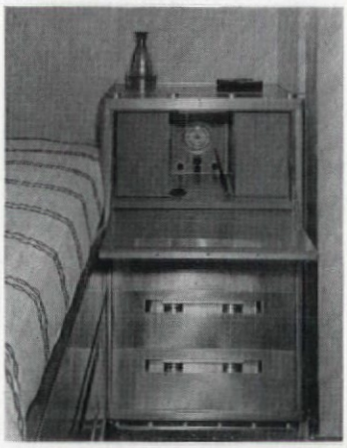


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See the July issue of this magazine



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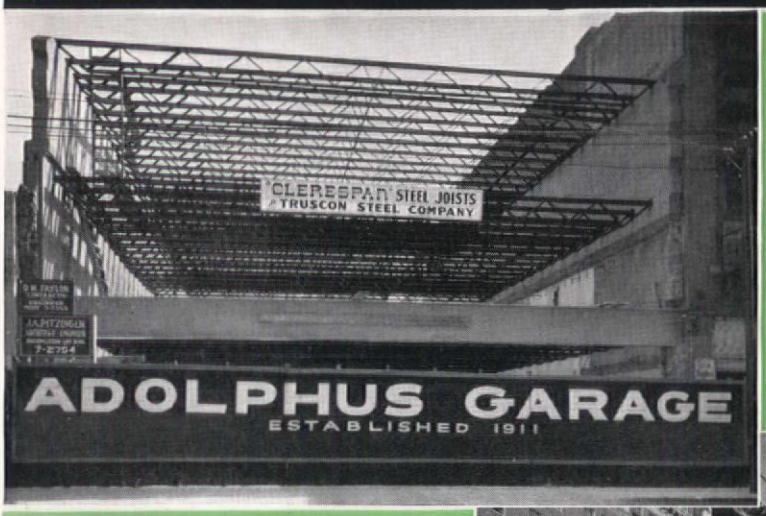
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Rapidly expanding business of the Adolphus Garage, Dallas, Texas, demanded quick action to secure larger floor areas. Time was a vital factor. Every day saved in construction meant a day gained for business earnings. • Other problems were faced. Floors had to be strong enough to support any legitimate load that might be placed upon them. Floor areas must be unobstructed by using a minimum of columns. Economy of installation was a vital factor to be considered. • The solution of all these problems was found in Truscon Clerespan Steel Joists which are designed to provide greater floor areas by minimizing and, in many instances, eliminating obstructing columns. Clear openings or net spans of Truscon Clerespan Joists are possible up to 64′-0″. They can be used with equal success in either floors or roofs. • See "Sweet's" for additional information or write for Truscon Clerespan Catalog No. E-60.

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